

# NAVAL POSTGRADUATE SCHOOL

## Monterey, California



## THESIS

**AN ANALYSIS OF THE EFFECT OF PRIOR-  
ENLISTED SERVICE ON NAVY OFFICER  
PERFORMANCE**

by

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June 1998

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NAVY OFFICER PERFORMANCE**

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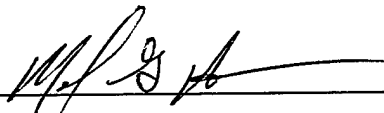
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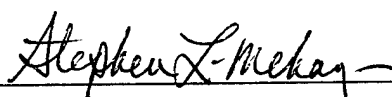
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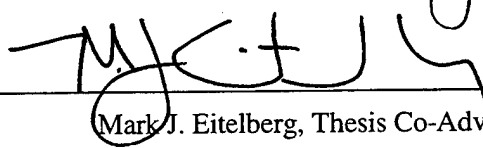
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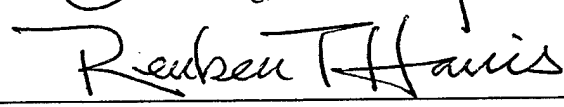
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## **ABSTRACT**

This thesis compares commissioned officers who have prior-enlisted service with those who have no prior-enlisted service on the basis of selected measures of performance. The primary source of information is the Bowman-Mehay database, which is used to analyze the effects of prior service on promotions through lieutenant commander. The study also looks at the gender and ethnic background of officers with prior-enlisted service and the total naval force. Two measures of performance were examined for officers whose promotion board to lieutenant commander occurred between fiscal years 1985 and 1995: whether the officer received a Recommendation For Accelerated Promotion (RAP) and whether the officer was promoted to lieutenant commander.

The results of the study show that prior-enlisted officers generally are not RAP'd as often as non-prior-enlisted officers but are promoted to lieutenant commander about equally. The results also suggest that the Navy lags in its attempt to have an officer corps that resembles the ethnic and gender composition of the enlisted force. This is noteworthy, since almost one-third of minority and female officers tend to come from the enlisted ranks. Several recommendations are offered for future research regarding prior-enlisted officers in the Navy.



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## **I. INTRODUCTION**

### **A. BACKGROUND**

The late Admiral Michael Boorda, Chief of Naval Operations, had visions of broadening opportunities for the Navy's enlisted commissioning programs when he initiated the "Seaman To Admiral" program in 1994. This program was similar to one that allowed Boorda to rise from the rank of first class petty officer to ensign and eventually, to admiral. His dream was to open the officer ranks to a larger number of qualified enlisted personnel who lacked a college education. The expectation here was that superior-performing enlisted personnel could be selected for college, obtain a Bachelor's degree, receive a commission, and then compete with the regular officer population.

The composition of the active-duty military has radically changed due to the recent force drawdown, a booming civilian economy, and a 14-percent gap between military and civilian pay and compensation (Maze, 1998). In the officer ranks, the drawdown forced many officers to leave service because they could not transfer from active-duty reserve status to the regular active-duty military. A vigorous and growing civilian labor market gave many

officers the opportunity to pursue civilian careers at higher levels of pay, performing the same tasks for which the military trained them. Although there is still some disagreement about the true differences in military and civilian pay, the perceived difference on the deck-plate level seems to say, "the grass is greener" in the civilian world. As Peniston observes:

Now, as the Navy enters the final two years of the drawdown, officials are faced with a troubling problem: Too many officers are quitting, and not enough are staying. Current retention rates won't keep the Navy's bridges and cockpits filled after the drawdown ends in two years, senior officials say (Peniston, 1997).

The Navy needs officers who have a "taste" for the Navy lifestyle and a propensity to "Stay Navy" longer than an initial commitment of 4 to 7 years. The enlisted force may provide the Navy with fertile ground for growing new officers who possess a longer-term commitment.

#### **B. PURPOSE**

The purpose of this research is to compare the performance of commissioned Navy officers who have prior-enlisted service with that of officers who have no prior-enlisted service. These comparisons are made using information from the Navy's promotion history file (compiled by William Bowman and Stephen Mehay) for the

unrestricted line and restricted line (Bowman and Mehay, 1997). Officer performance is tracked through the 0-4 (lieutenant commander) promotion boards. The study seeks to evaluate the differences in performance between the two groups and to determine whether prior-enlisted personnel may be a cost-effective source of future commissioned officers. Specifically, this research attempts to answer the following questions:

1. Do prior-enlisted officers perform as well as their peers with no enlisted service?
2. What is the current racial and gender composition of prior-enlisted officers, and how does it compare with that of officers with no enlisted service?
3. Would a concentrated effort to commission minorities from the enlisted ranks help to push the Navy closer to its "12-12-5" (that is, 12 percent Black, 12 percent Hispanic, 5 percent Asian Pacific Islander, Native American/Alaskan Native) diversity goal for the officer corps?
4. What is the average length of time that the prior-enlisted person serves as a commissioned officer?

For many years, the Navy has provided excellent opportunities for personnel to advance in rank on the basis of performance. This includes the opportunity to rise from the enlisted ranks to the officer corps through many commissioning programs. Some examples include the Broadened Opportunity for Officer Selection and Training (BOOST) program, the Enlisted Commissioning Program (ECP), and the Naval Reserve Officer Training Corps (NROTC). Some people criticize enlisted commissioning efforts as being "just another social program," while others see them as useful ways to tap an underutilized human resource. Statistical analysis can be used to analyze whether there are measurable differences between the performance of prior-enlisted officers and that of other officers. If prior-enlisted officers perform on an equal footing with officers who have no prior service, an argument could be made to expand opportunities to the enlisted ranks as a source of commissioned officers.

#### **C. SCOPE, LIMITATIONS, AND ASSUMPTIONS**

The rank of lieutenant commander is a major milestone in a Navy officer's career, and one that will affect his or her decision to remain in service. Selection to this rank occurs around the eighth to eleventh year of commissioned

service. Promotions before lieutenant commander tend to be automatic. It is for this reason that promotion to lieutenant commander is the focus of the study. The Bowman-Mehay officer promotion file is used due to its compilation of several officer files (Bowman and Mehay, 1997). However, some background factors that may be important in explaining promotion outcomes were not available in the file. These factors include prior job assignments and innate abilities, which may account for some promotion differences between prior-enlisted and non-prior-enlisted officers.

Information from personal fitness reports (FITREPs) is included in the file. FITREPs are assumed to measure on-the-job performance and, therefore, promotability. There is some controversy about "grade inflation" in FITREPs over the years in this study. Nevertheless, these measures are useful in comparing populations of officers over similar periods. It should also be noted that promotion boards have taken positive steps to level out the grading.

Retention is another factor that can be explained independent of FITREPs. The decision of an officer to stay in or leave the Navy is not always connected with high marks on a fitness report. Many prior-enlisted officers



will stay through their advancement cycle to lieutenant commander and retire as a lieutenant with twenty years of service.

#### **D. ORGANIZATION OF STUDY**

This study is organized into five chapters and two appendices. Chapter II contains a review of enlisted-to-officer programs and pertinent prior research, which provides background for the statistical analysis. Chapter III explains the methodology and the data used in the study. The variables used in the models are also presented in Chapter III. Chapter IV contains the results of the performance and promotion models employed in the data analysis. The discussion focuses on differences between prior-enlisted and non-prior-enlisted officers. Chapter V presents conclusions and recommendations. The appendices provide descriptive information on Navy officers in the staff corps and unrestricted line community.

## **II. HISTORY**

This chapter contains a description of enlisted-to-officer programs and an explanation of why certain enlisted personnel enter these programs. The chapter also contains a critique of a prior study on officer performance by the Center for Naval Analyses (CNA), followed by a discussion of officer performance measures and model specifications.

### **A. COMMISSIONING PROGRAMS**

Criteria for selection to a commissioning program emphasize that enlisted personnel possess a wide range of experience. Navy selection boards look at the "whole person," or a combination of attributes that demonstrate superior ability and leadership potential. Persons who excel at tough assignments, are qualified quickly, and tend to go beyond their rating are viewed most favorably. Individuals who can meet these previously-mentioned hurdles early in their career are more likely to gain a commission.

Officer commissioning programs can be divided into three categories: programs that do not require a college degree; programs that require a college degree; and programs through which a college degree can be earned. Programs that do not require a college degree include

Limited Duty Officer (LDO) and Chief Warrant Officer (CWO). Programs that require a college degree are Officer Candidate School (OCS) and Aviation Officer Candidate School (AOCS). Programs through which enlisted personnel can earn a degree toward commissioning BOOST, ECP, NROTC, a fleet seat at the Naval Academy, and the "Seaman-to-Admiral Program."

Application instructions and eligibility for commissioning programs are contained in BuPers Inst. 1131.A. The three categories of enlisted-to-officer programs are described more fully below.

#### **1. Programs That Do Not Require A College Degree**

The following programs do not require a college degree, although candidates who have some college education are considered more competitive. Acceptance into one of these programs offers an individual more opportunity and greater responsibility. Once accepted, candidates go to Pensacola, Florida for a short "knife and fork" indoctrination class.

##### **a. Limited Duty Officer (LDO)**

The LDO programs select candidates from among first class petty officers (who have completed requirements

for chief petty officer) through senior chief petty officer. Each candidate must have 8 to 16 years of service and a high school diploma or its equivalent. There is no age restriction, but the candidates must be recommended by their commanding officer.

In 1998, 2,737 candidates applied for a LDO commission. Just 9.3 percent, or 255 enlisted personnel, were eventually selected (Burlage, 12). For candidates to be competitive, they generally need to be warfare-qualified, have two or more personal awards, and have completed eight or more correspondence courses in addition to courses required for advancement (Burlage, 13).

**b. Chief Warrant Officer (CWO)**

The CWO program selects only from chief petty officers in the Navy. Candidates must have 12 to 24 years of service and possess a high school diploma or its equivalent. Again, the candidates must be recommended by their commanding officer.

In 1998, 1,006 candidates applied for a CWO commission. About 19.5 percent, or 196 people, were selected (Burlage, 12). For candidates to be competitive, they need to be warfare-qualified, have two or more personal awards, and have completed eight or more

correspondence courses in addition to courses required for advancement (Burlage, 13).

## **2. Programs That Require A College Degree**

Programs that require a college degree before application include OCS and AOCS. Approximately 40 to 60 percent of all officers in the Navy come from these programs (Bowman and Mehay database, 1998). Candidates must have an acceptable college grade-point-average, meet certain physical standards, and pass a series of written exams.

OCS is a 13-week program, designed to educate and train college graduates (civilian and active duty) in basic naval knowledge and skills necessary to satisfactorily perform as a junior line officer. The OCS curriculum includes: Damage Control, Shipboard Engineering, Seamanship, Military Indoctrination, Joint Organization and Operations, Naval History, Military Law, Military Training, Navigation, Naval Leadership, Naval Warfare, Personnel Administration, Professional Development, Physical Fitness, Special Emphasis Programs, and Water Survival. AOCS candidates attend OCS and then proceed to flight training upon commissioning.

During fiscal 1996, 24 OCS classes were convened. Of the 896 reporting officer candidates, 781 graduated, 79 dropped on request, 31 were not physically qualified, and 5 dropped out of the program for other reasons (OCS webpage, 1998).

### **3. Programs Through Which A Degree Can Be Earned**

Various college programs are available to active-duty enlisted personnel who can complete all degree requirements and be commissioned prior to their 27<sup>th</sup> birthday. Candidates can add up to four years for active-duty time served, which makes 31 years the maximum age of commissioning. These programs are described below.

#### **a. Broadened Opportunity For Officer Selection And Training (BOOST)**

BOOST candidates are sent to a boot camp-style prep school that prepares them for the rigors of college math, science, and physics. BOOST is essentially a college preparatory course for young men and women who exhibit the potential to become an officer but lack the required academic skills to qualify for one of the Navy's college programs. The Navy originally created the program in the late 1960's for "educationally and culturally deprived"

persons. After attending BOOST classes, the candidates are enrolled in NROTC or the US Naval Academy.

**b. Enlisted Commissioning Program (ECP)**

The ECP selects from the fleet sailors who have completed four years of service and hold a high school diploma or its equivalent and the equivalent of an Associate's degree. (This is defined as 30 semester hours of college for a technical degree and 45 semester hours for a non-technical degree.) Candidates must be at least 22 years old and be recommended by their commanding officer.

Selectees are ordered to a participating college where they begin studies. The selectees retain their enlisted rank and pay for their own tuition. They are assigned to the nearest NROTC unit for drilling and administrative details.

In 1998, 450 candidates applied for ECP and less than 10 percent (or 44 persons) were selected (Burlage, 12). For candidates to be competitive, they need to be warfare-qualified and have two or more personal awards. Many candidates are a "sailor of the year," and are ranked among the top 5 to 10 percent of their peer groups.

**c. Naval Reserve Officer Training Corps (NROTC)**

The NROTC objective is to train qualified officer candidates to perform as unrestricted line officers or in the nurse corps. NROTC programs offer both two- and four-year scholarships. Scholarships include tuition, books, uniforms, instructional fees, and a \$150 per-month allowance. Room and board are not provided. Enlisted personnel are released from active duty and are not eligible for pay and allowances, medical benefits, or normal active-duty entitlements while receiving the scholarship.

Applicants compete based on scores from either the Scholastic Assessment Test (SAT) or the American College Test (ACT). The minimum acceptable score is 530/520 on the verbal/math components of the SAT or 22/22 on the English/math components of the ACT. Each person is judged as to his or her ability to handle the college-level curriculum, which includes calculus and calculus-based physics.

To compete for a two-year scholarship, applicants must have completed two years of college (three years if in a five-year program), maintained a grade-point-average of



2.5 on a 4.0 scale, and have completed both differential and integral calculus.

Two-year scholarship selectees must complete a six-and-one-half week course at the Naval Science Institute in Newport, Rhode Island prior to starting their junior year. Courses include instruction in naval science and drills that would normally be taught during freshman and sophomore years of NROTC.

#### **d. A Fleet Seat At The Naval Academy**

The Naval Academy is an undergraduate college of the U.S. Navy. The four-year curriculum awards a Bachelor of Science degree to graduates who are embarking on careers as Navy or Marine Corps officers. Candidates must be at least 17 years old but not older than 22. Each applicant must have a nomination from one of the following sources: the President, Vice President, an U.S. Senator or member of the House of Representatives. Enlisted personnel compete for 85 appointments through their respective commands [OpNavInst 1531.4 (series)]. Children of Medal of Honor winners do not have to compete, and there are no limits on their number.

Applicants compete based on scores from either the SAT or ACT. There is no minimum score, but to be

competitive with other candidates, applicants should have better than 530/600 on verbal/math components of the SAT or 22/26 on the English/math components of the ACT. Each person is judged as to his or her ability to handle the college-level curriculum. Secondary school work should normally include geometry, trigonometry, algebra, English, two years of a foreign language, physics, and chemistry. Computer instruction is advised.

All nominees compete, and the best qualified are chosen from their respective category. Evaluation is based on academic records, test scores (SAT/ACT), recommendations, and participation in school activities, sports, and community affairs.

**e. "Seaman To Admiral Program"**

The "Seaman to Admiral Program" was recently developed as a re-creation of a similar program that ended over 15 years ago. Each year, 50 enlisted personnel are instructed to attend a college near a major homeport area in Norfolk, Virginia Jacksonville, Florida or San Diego, California first. After graduation, they attend OCS and then proceed to their first fleet tour.

Participants receive full pay and allowances, and the Navy pays for tuition and books. Selectees have three years to earn a degree and attend OCS.

#### **B. WHY BECOME AN OFFICER?**

Perhaps one of the major reasons for an enlistee to seek a commission involves pay. From the 1998 pay chart, a prior-enlisted ensign with 12 years of service (O1-E) receives \$2,650.60 a month; a warrant officer (W-2) with 12 years of service receives \$2,532.60 a month, and a chief petty officer (E-7) with 12 years of service receives \$2,139.60 a month. Allowances add to members' pay. For example, an E-7 receives \$772.44 in housing allowance; a W-2 receives \$1,010.00; and an O-1E receives \$811.45 a month.

Another reason for an enlistee to seek a commission is upward mobility. As an enlistee, one can rise only to the rank of Master Chief (E-9). As a Warrant Officer, the top rank is Chief Warrant Officer-4 (CWO-4). As an LDO, one can rise to Captain (O-6). As a regular commission holder, Fleet Admiral is possible (O-11).

Pay and how far one can go up the Navy ladder are not always the deciding factors for an enlistee to become an officer. The term "rank has its privileges" suggests another factor. The Navy, as with all military services,

offers a very different lifestyle to its officers than to its enlisted personnel. Although quite minor, the dining areas on ship illustrate this point: the officers' wardroom facility has table service, whereas the crews' and chiefs' messes are self-serve only. Officers are also given more responsibility and greater challenges in many ways. A clear example here is involves the author, who rose from minding electrical generators on a submarine to taking his crew and aircraft half-way around the world and back. That feeling is like getting the keys to your parents' car for the first time.

#### **C. REVIEW OF CNA STUDY OF OFFICER PROMOTIONS**

The Chief of Naval Personnel asked CNA to examine whether the Navy's commitment to equal opportunity policies were being upheld and to determine if these policies could be modified or enhanced to improve promotion opportunities for minorities. First, CNA needed to discover if racial differences affect promotion rates and to analyze the factors contributing to any differences (Koopman, Board, Reese, 1995).

At the time of the study (1995), there was an 8-percentage point difference in promotion rates to lieutenant between African-Americans and whites. The

perception was that this difference could somehow be racially influenced. In light of the current military structure, there may be some discrimination, but other factors likely come into play. Unless these other factors are satisfactorily explained, the appearance of racial preference could be detrimental to the order and discipline necessary in the military.

Promotion rates are the result of a series of complex interactions between occupation, opportunity, the Navy's promotion policies, and job vacancies. CNA restricted the study to surface warfare officers (SWO) in designators 1110, 1160, 1115, or 1165 (excluding nuclear qualification designators). Promotions to lieutenant and lieutenant commander were examined between the period from 1976 to 1990. Researchers focused on two measures of success:

- Promotion to lieutenant by 51 months (this captured 90 percent of 0-3 promotions).
- Promotion to lieutenant commander by 132 months.

The data included personal characteristics, college education, accession source, prior enlisted experience, initial assignments and qualifications, and whether the officer jumped into or out of the SWO community.

The major variables for promotion to lieutenant were personal characteristics, college characteristics, source

of accession, and division officer tours. An added set of variables for promotion to lieutenant commander included Additional Qualification Designators to include: Anti Submarine Warfare, Joint Duty, Tactical Action Officer, Recruiter Duty, and Instructor Duty.

### **1. Relevant Findings**

Promotion rates for lieutenant were found to be 4 percentage points lower for blacks (differences in college, accession source, and division officer tour explained half of the original 8-percent difference) and 5 percentage points lower for other minorities. Engineering, science and business undergraduate majors faired better than non-technical majors did. Prior-enlisted officers, commissioned through NROTC or other enlisted commissioning programs, did respectively better than those commissioned through OCS. Women, persons who are married, and persons who graduated from a competitive college, did better than the mean.

Promotions of minorities and whites to lieutenant commander were found to have similar estimates. Coefficients were positive and significant for women, persons who had graduate school education, and officers who came from enlisted-commissioning programs. The strongest

promotion predictors were the attainment of additional qualifications and holding an engineering position as a division officer.

#### **D. OFFICER PERFORMANCE MEASURES**

There have been a few studies that try to compare one officer group with another. Bowman's "Do Engineers Make Better Junior Officers" (1990) is one such study. In this work, Bowman examined how engineers from the Naval Academy fared against graduates of non-engineering curricula. More specifically, Bowman tested the hypothesis of Admiral Rickover's statement that the best naval officers have a solid technical college background. Bowman narrowed his measurement to the time that the officer served as a division head. This was considered the most crucial period of the first tour. The measurement used was the FITREP given by the senior officer, the person with whom the junior officer has worked most closely. The mark of distinction from the FITREP is the recommendation for accelerated promotion and ranking in the top 1 percent. A second measure of successful performance in Bowman's study was retention in the service. Bowman found that roughly one-fifth of the officers leave as soon as their first

service contracts are completed, generally, Bowman did not find support for Rickover's hypothesis in his data.

A Rand study by Gay and Albrecht (1977) put forth some ideas on productivity measurement. Measures should permit estimations over time, not just at a single point, and measure net productivity, not gross productivity. Measures must be linked to the individual to whom they apply. The ideal situation would be to actually measure the individuals and the units they are attached to; but, given the large numbers of individuals in the studies, some other means of measuring must be used.

Substitution measurements can fulfill the criteria set before and are significantly less costly. Job testing is one measure that can be accomplished with little trouble and can be done on an individual over time to mark the progress of specific job skills. Another substitution method is the supervisors' rating of the subordinate, which is what the RAND study used. While Gay and Albrecht think that enlisted supervisors would find the concept of net productivity hard to follow. Each supervisor, officer or enlisted, knows when a subordinate is a help or a hindrance.



The RAND study sent surveys to enlisted supervisors asking them to rank their subordinates and the training that the subordinate received, whether the training was an "A" school or on-the-job, and how much they contributed to the division based on net productivity. Supervisors were tested as to whether they understood the concept of net versus gross productivity to conclude if their comments were valid. The results of the study showed that, based on a four-year tour most, "A" school and on-the-job trainees performed equally well.

Supervisory reports, FITREPs, are the single-most career-enhancing, or career-ending, documents that exist for officers. The contents of these documents significantly determine whether an officer is promoted, which is the ultimate determinant of "success" in the military.

#### **E. MODEL SPECIFICATIONS**

Once the way to measure performance is complete, the next step is to create a model that can explain the analytical results consistently. A 1997 study by Mehay and Bowman develops a model that divides human capital into cognitive skills and affective skills. Cognitive skills are proxied by grade-point-average, type of degree

(technical vs. non-technical), and graduate education. Proxies for affective skills came from the following accession sources: Naval Academy, NROTC, OCS, and enlisted commissioning programs. Some factors can be correlated to certain demographics including, gender and minority group. These could be due to occupational availability or assignment restrictions. Other demographics that can play an important part in a willingness to perform well or cause major distractions on the job are marital and dependency status. The final factor that Mehay and Bowman brought out is that the Navy promotes to fill vacancies. This implies opportunities for promotion vary from year to year, so the addition of yearly dummy variables is used to account for cohort promotion opportunities.

The last item for discussion is survival analysis. In each promotion model, where promotion is looked at after the initial commitment of time is complete, survivability (retention) is used as a performance measure. Those who have a "taste" for military life will generally perform better than will those who only thought it was a good idea at the time they joined.

The groundwork has been laid to conduct this study of the effect of prior-enlisted service on officer promotions.

The analytical model should contain variables that can account for differences in opportunity, background, demographics, job type, and survival to the promotion board. The important variables and the analytical approach adopted for the present study are described more fully in Chapter III.

### III. DATA AND METHODOLOGY

#### A. DATA: THE BOWMAN-MEHAY OFFICER DATABASE

The Bowman-Mehay officer database consists of three separate files merged into a single data file. The three files are the Navy's Promotion History File, Fitness Report File, and the Loss File. The following descriptions are reproduced from unpublished course materials for Professor Mehay's MN4761 class at the Naval Postgraduate School:

1. **Promotion History File:** Each data set is constructed by combining two successive promotion board records - LT/LCDR; LCDR/CDR; and CDR/CAPT that are derived each fiscal year by Navy Bureau of Personnel (BUPERS). Because the vast majority of officers automatically promote through earlier grades and so few promote at higher grades, the other promotion boards have never been assimilated for analysis. For each grade level, retrospective data elements from the Officer Data Card are combined with actual outcomes of the promotion board for all officers considered "in-zone" for the particular board in the given fiscal year. To increase the number of observation for analysis, roughly ten-years of promotion board considerations are combined.
2. **Fitness Report File:** Summary data derived from all fitness reports for nearly 90% of all officers included in each *Promotion History File* are also included. Performance measures can be derived from these data elements, including the proportion of FITREPs for which the officer was recommended for accelerated promotion (RAP'd), was rated first among those RAP'd, etc.
3. **Loss File:** Summary data for reasons why and when an officer left active duty are also included for

the purpose of doing retention-type data analyses.

The Bowman-Mehay officer database includes four separate groups of data. The four elements are pre-commissioning data, retention data, Navy experience data, and officer performance measures. The following descriptions come from unpublished course materials for Professor Mehay's MN4761 class at the Naval Postgraduate School:

1. **Pre-Commissioning Data Elements:** Common demographic data and undergraduate schooling data are either given in the data sets, or can easily be derived with simple coding. These include: race, gender, marital status, commissioning source, prior-enlisted status, college name and Barron's college selectivity code, HBCU code, major, and all three Academic Proficiency Codes (APCs) - grades, math, and science.
2. **Retention Status Data Elements:** Length of active duty service up to the number of years reached at the higher of the two successive promotion boards is known, along with the reason why officers leave if they pass through the lower of the two successive promotion boards but leave prior to the higher board.
3. **Navy Experience Data Elements:** Retrospective data covering the ship and plane-types assigned, additional qualification designators (AQDs) achieved, graduate education earned, and joint duty status prior to each of the two successive promotion boards along with the year (and sometimes month) that these assignments or achievements were recorded.
4. **Officer Performance Measures:** Various performance measures calculated for each grade level prior to

each of the two successive officer promotion boards are available, along with the actual board outcomes, including: selected "below-zone," selected "in-zone," or failed to select "in-zone." Only those who are classified as selected "above-zone" at the lower of the two successive promotion boards are recorded

Table 1 contains groups of variables used in the analyses in Chapter IV. There are three broad categories of data. Category I contains personal characteristics such as gender, race, and marital/dependent status. Gender and race are coded as binary variables. Race is broken into white, black, and other categories. A series of binary variables for married or single and the number of dependents in the household capture marital/dependency status.

Category II consists of variables for undergraduate and postgraduate education. The undergraduate section consists of binary variables of the selectivity of the college based on its rank in Barron's Guide of colleges and whether the degree was technical or non-technical. Postgraduate education includes binary variables if a postgraduate degree was earned or not and whether the degree was technical or not.

**Table 1. General Variables For Comparison Of Officer Performance Analysis**

<b>I. PERSONAL DEMOGRAPHICS</b>
- GENDER
- RACE
- MARITAL/DEPENDENT STATUS
<b>II. EDUCATIONAL EXPERIENCE</b>
- UNDERGRADUATE EDUCATION
- POSTGRADUATE EDUCATION
<b>III. MILITARY EXPERIENCE</b>
- WARFARE COMMUNITY
- FITREPs
- PRIOR-ENLISTED SERVICE
- YEAR GROUP
- COMMISSIONING SOURCE

**Source:** Derived from data provided in Bowman-Mehay file.

Category III includes military experience variables. These include warfare community, FITREPs, prior-enlisted service, year group, and commissioning source. Warfare community is broken down into submarine, pilot, Naval Flight Officer (NFO), Surface Warfare Officer (SWO) for unrestricted line officers (see Table 2). Fitness report information is used to create a variable for the percentage of Recommended for Accelerated Promotion (RAP) as shown on valid reports and the number of times the officer was listed in the top 10 percent. Prior service, year group, and commissioning source are coded as binary variables.

Table 2 contains descriptions and the designator codes of the communities used in this research. Categories "OTHER URL" and "OTHER STAFF" contain the combination of officers not previously listed in the line or the staff corps, respectively.

**Table 2. Description Of Variables For Officer Community**

VARIABLE	DESCRIPTION	DESIGNATOR
GURL	General Unrestricted Line Officer	1100, 1105
SWO	Surface Warfare Officer	1110, 1115
SUB	Submarine Warfare Officer	1120, 1125
PILOT	Naval Aviator	1310, 1315
NFO	Naval Flight Officer	1320, 1325
OTHER URL	Various Unrestricted Line Officers	Line Officers not listed
RL	Restricted Line	1700, 1705
SUPPLY	Supply Corps Officer	3100, 3105
OTHER STAFF	Various Staff Officers	Staff Officers not listed

**Source:** Derived from data provided in Bowman-Mehay file.

Table 3 provides a complete list of the variable names used in the statistical analysis, the coding of the variable and the mean of each variable. The proportions are based on 24,672 officers in the unrestricted line and 9,356 officers in the staff corps. This snapshot is taken from the selection board results for lieutenant commander, for the "In-Zone" results of promotion. Information provided is looking backward at lieutenant and earlier.



**Table 3. Variable Names, Descriptions, Number, And Percent Of Each Community**

NAME	DESCRIPTION	STAFF	URL
FEMALE	= 1 IF Female	29.8%	1.3%
BLACK	= 1 IF Black	5.2%	3.2%
OTHER	= 1 IF Minority	2.6%	2.3%
MNC	= 1 IF Married With 0 Children	10.8%	10.9%
MW1C	= 1 IF Married With 1 Children	9.7%	9.3%
MW2C	= 1 IF Married With 2 Children	12.8%	11.0%
MW3C	= 1 IF Married With 3 Children	6.2%	4.6%
DWC	= 1 IF Divorced With Children	1.8%	0.8%
SINGLE	= 1 IF Single	33.1%	20.6%
MARRIED	= 1 IF Married	66.9%	79.4%
CHILDREN	= 1 IF Children	51.7%	57.1%
MILSPS2	= 1 IF Married To A Military Spouse	10.5%	3.6%
TECH	= 1 IF Undergraduate Degree In Technical Field	44.3%	63.2%
HIGH_SEL	= 1 IF Undergraduate College Was Very Selective Based On Barron's Guide	25.4%	41.2%
MED_SEL	= 1 IF Undergraduate College Was Moderately Selective Based On Barron's Guide	58.2%	46.6%
LOW_SEL	= 1 IF Undergraduate College Was Not Selective Based On Barron's Guide	15.9%	11.8%
NOTCLASS	= 1 IF Undergraduate College Was Not Classified Based On Barron's Guide	0.5%	0.5%
GURL	= 1 IF GURL	23.8%	0.5%
SWO	= 1 IF SWO		13.0%
SUB	= 1 IF SUBMARINE		6.1%
PILOT	= 1 IF PILOT		12.0%
NFO	= 1 IF NFO		9.1%
OTHERURL	= 1 IF OTHER URL		0.4%
RL	= 1 if Restricted Line	38.4%	
SUPLCORP	= 1 IF SUPPLY CORPS	26.4%	

**Table 3 (cont.)**

<b>NAME</b>	<b>DESCRIPTION</b>	<b>STAFF</b>	<b>URL</b>
OTHSTFCP	= 1 IF OTHER STAFF CORPS	10.3%	
NONSPON	= 1 IF Graduate Education Came From A Non-Sponsored School	6.6%	3.5%
CIVSCHL	= 1 IF Graduate Education Came From A Civilian School	4.7%	0.8%
NPS	= 1 IF Graduate Education Came From Naval Postgraduate School	9.9%	7.3%
MTECH	= 1 IF Postgraduate Education Is Technical	10.2%	6.8%
BLACK_E	= 1 IF Black And Prior- enlisted	2.1%	0.9%
OTHER_E	= 1 IF Other Minority And Prior-enlisted	1.1%	0.5%
FEMALE_E	= 1 IF Female And Prior- enlisted	10.9%	0.4%
PRIORE	= 1 IF Prior-enlisted	37.0%	25.6%
LCSTAY	= 1 IF Stay Until Lieutenant Commander Board (0-4)	59.2%	45.3%
PCTRAP12	Percent Of Valid FITREPs That Reported RAP As Ensign (0-1) And Ltjg (0-2)	38.3%	29.7%
PCTRAP3	Percent Of Valid FITREPs That Reported Rap As Lieutenant (0-3)	68.3%	62.1%
TOPFIT12	= 1 IF RAP'd In Grades 0-1 Or 0-2	43.8%	40.2%
TOPFIT3	= 1 IF RAP'd In Grade 0-3	35.4%	41.5%
PROMOTE	= 1 IF Promoted To 0-4	43.3%	33.8%
FOS0-4	= 1 IF Failed To Promote To 0-4	16.0%	11.5%
FOS0-3	= 1 IF Failed To Promote To 0-3	2.9%	2.5%
DISCH	= 1 IF Involuntarily Discharged '	2.5%	0.7%
VQUIT	= 1 IF Voluntarily Quit	35.0%	51.1%
RETIRED	= 1 IF Retired From Active Duty Service	0.4%	0.4%
N	Sample Size	9,356	24,672

**Source:** Derived from data provided in Bowman-Mehay file.

**Note:** Percentages based on total number of officers at 0-3 promotion board.

## **B. METHODOLOGY**

As previously noted, this study compares the performance of prior-enlisted officers with that of non-prior-enlisted officers. It uses statistical analysis to determine performance differences between both groups. Performance measures are presented by broad category as well as by race, gender, and warfare specialty. The following describes retention and officer performance for the purpose of this study.

### **1. Retention**

Retention in this study is based on one's time in service. Non-prior-enlisted officers have only their active commissioned time on the books, but the prior-enlisted officer may have many years of service before his or her commissioning date. This cumulative time may have an effect on promotion and rankings. The prior-enlisted officer may not feel compelled to compete with others must be promoted to stay until retirement. Once commissioned, both officers compete for jobs and promotion possibilities., the Prior-enlisted officers, however, know that they may get by without promotion to lieutenant commander and just retire as a lieutenant.

## **2. Officer Performance**

The most visible sign that an officer is performing well is when he or she is promoted. For that reason, this study uses a multivariate Logit model to account for possible differences in promotion to O-4, based on race, gender, marital status, warfare community, college selectivity, and year of the promotion board, as well as prior-enlisted service. The demographic and service variables are used as control variables to isolate the direct effect of being a prior-enlisted officer on promotion. Once the Logit model is formulated and estimated, marginal probabilities are calculated. These provide the effect of a change in each of the explanatory variables in the model on the probability of promotion.

Another characteristic of performance is receiving a RAP, as previously noted. This is an indicator that the officer is a "front runner." The Bowman-Mehay files contained a variable which calculated the percentage of RAP'd reports for all of the valid reports the officer received. Grades O-1 and O-2 (PCTRAP12) were merged and grade O-3 (PCTRAP3) was examined separately. These performance measures are modeled using simple ordinary least squares' regression techniques. In the same light,

the study looked at whether the officer ever received a RAP in grades 0-1 and 0-2 (TOPFIT12) and if 75 percent and above reports for grade 0-3 (TOPFIT3) had received a RAP. The last two models use binary-coded dependant variables and a Logit-regression technique.

#### **IV. DESCRIPTIVE STATISTICS AND MODEL RESULTS**

The results of the Logit and Ordinary Least Squares (OLS) models are presented in this chapter. The results are presented in two separate sections, one for the staff corps and a second for the unrestricted line. Each section first provides simple statistics on gender, race, community, and other individual characteristics, followed by the performance and promotion models. Potential explanations for any observed differences between the prior-enlisted officers and non-prior-enlisted officers are discussed in the conclusions.

##### **A. PROMOTION TO LIEUTENANT COMMANDER AMONG STAFF CORPS OFFICERS**

The staff corps is a mixed breed that has a few peculiarities with respect to the present study. One is that, for some technical jobs, a person can be recruited into a higher rank. For example, a surgeon could enter the military with eight years of private practice and receive the rank of lieutenant. In two years, he or she would be considered for promotion to lieutenant commander. Second, the old general unrestricted line officers (GURL) community was disbanded recently and the 1700 community in the staff corps was created to replace it.

## **1. Descriptive Statistics For Staff Corps Sample**

This section discusses the descriptive statistics for staff corps sample. All of the statistics discussed in the following section are presented in Table 3 (in Chapter III) above.

### **a. Prior Vs Non-Prior-Enlisted Officers**

One surprising finding is that 37 percent of the staff corps is comprised of prior-enlisted officers. This may be due to the large number of limited duty and warrant officers in the staff corps.

### **b. Gender**

Almost 30 percent of the staff corps are female. One reason for the relatively high proportion of women is the inclusion of the GURL (now the 1700) community, which contains mostly shore-based administrative billets. Of the 37 percent prior-enlisted officers, approximately 70 percent are male and 30 percent are female. Note that almost 11 percent of the total staff corps are female officers with prior-enlisted service.

**c. Race**

In the staff corps, Table 3 shows that the Navy is well behind in achieving its goal of "12-12-5" (12 percent black, 12 percent Hispanic, and 5 percent Asian Pacific Islander, Native American/Alaskan Native.) The community is comprised of 5.2 percent black officers and 2.6 percent officers of other racial or ethnic (minority) background. For the staff corps, 2.1 percent are black with prior-enlisted service and 1.1 percent are "other" with prior-enlisted service. Note that around 40 percent of minority officers come from the enlisted force.

**d. Total Service**

The mean total service time for prior-enlisted staff corps officers who continued to the 0-4 promotion board is 12.8 years with a standard deviation of 3.1 years. The mean service time for an officer with no prior service is 10.6 years, with a standard deviation of 1.8 years.

Table 4 shows the number of years in prior-enlisted service for staff officers in the database. Officers with zero years are non-prior-enlisted. As seen here, 23.7 percent of the prior-enlisted officers in the staff corps are commissioned around their ten-year enlisted service point. Under normal conditions, this would put



them at 20 years total service time when they are looked at for grade 0-4, because promotion to 0-4 occurs around the tenth year of commissioned service.

**Table 4. Breakdown Of Prior-Enlisted Time Served For Staff Corps Officers**

PRIOR ENLISTED YEARS OF SERVICE	FREQUENCY	PERCENT OF SAMPLE
0	5,893	63.0
2	3	0.0
3	125	1.3
4	424	4.5
5	269	2.9
6	167	1.8
7	105	1.1
8	58	0.6
9	93	1.0
10	2,219	23.7

Source: Derived from data provided in Bowman-Mehay file.

Note: Percentages based on total number of officers at 0-3 promotion board.

#### **e. Staff Corps Community**

The largest community within the staff corps is that of the restricted line, which constitutes 38.4 percent of all staff corps officers. The next largest community is the supply corps, with 26.4 percent. This is the community the officer belonged to when he or she was at the 0-3 board (for the officers who remained to the 0-4 board). The GURL community was included within the staff corps because of the transition to 1700 fleet support (RL) community. GURL makes up 23.8 percent of the adjusted staff corps.

**f. Year Groups**

Table 5 shows the number of officers screened at each promotion board for fiscal 1985 through 1995. This equates to officer year groups 1976 through 1986. The frequencies represent the number of officers being reviewed by each promotion board, which includes the number promoted plus the number who failed to be selected for lieutenant commander. There appears to be significant variation in the number and percentages for promotions from year to year, which is accounted for in the models using dummy variables for the promotion board years.

**Table 5. Number and Percentage of Staff Corps Officers Screened At Each 0-4 Promotion Board, Fiscal 1985-1995**

<b>FISCAL YEAR</b>	<b>FREQUENCY</b>	<b>PERCENT OF SAMPLE</b>
<b>1985</b>	303	5.5
<b>1986</b>	391	7.1
<b>1987</b>	686	12.4
<b>1988</b>	428	7.7
<b>1989</b>	503	9.1
<b>1990</b>	547	9.9
<b>1991</b>	656	11.8
<b>1992</b>	241	4.3
<b>1993</b>	557	10.0
<b>1994</b>	512	9.2
<b>1995</b>	718	13.0

**Source:** Derived from data provided in Bowman-Mehay file.

## **2. Model Results**

### **a. Performance As Ensign And Lieutenant Junior Grade For Staff Corps Officers.**

Table 6 shows the results of a simple regression with PCTRAP12 as the dependent variable for the performance model. PCTRAP12 is the number of FITREPs that are RAP'd as a percentage of all valid FITREPs an officer has on file in grades 0-1 and 0-2. The information shows that a prior-enlisted officer receives fewer RAPs than other officers do. That is, prior-enlisted officers receive about 5 percent fewer RAPs. The possible reasons for this are discussed in the concluding section.

Prior-enlisted officers are not the only ones who are falling short on RAP reports in this model. Minorities and women do not fare well compared with whites and men. Naval Academy and NROTC graduates are RAP'd less than NESEP graduates, although the differences are not statistically significant. Officers who have positive differences in RAP percentages include those who are married, those who were commissioned through OCS, and personnel with a technical master's degree. However, of these, only the technical degree coefficient is significant. The goodness-of-fit statistics reveal that the model is not very robust, with

only four variables (of 15) significant at the .01 level and only six significant at the .05 level. The low explanatory power of the model is reflected in the low F-statistic, which is significant at the .01 level.

**Table 6. Regression Results On Percentage Of RAP FITREPs In Grades 0-1 And 0-2 Of Staff Corps Officers (Dependent Variable = PCTRAP12)**

VARIABLE	MEAN	COEFFICIENT	T-STAT	PROB>[T]
INTERCEP	1.0	36.173	10.638	0.000
BLACK	0.0474	-11.130	-3.335	0.001
OTHER	0.0179	-10.627	-1.973	0.049
FEMALE	0.3113	-4.111	-2.197	0.028
MARRIED	0.6359	1.992	1.010	0.312
CHILDREN	0.4806	0.447	0.247	0.805
USNA	0.1130	-3.011	-0.808	0.419
NROTCS	0.1646	-3.445	-1.216	0.224
NROTCC	0.0334	-7.377	-1.583	0.114
OCS	0.5804	1.211	0.453	0.651
TECH	0.4755	-4.871	-2.950	0.003
HI_SEL	0.2271	0.148	0.064	0.949
LOW_SEL	0.1700	-0.386	-0.199	0.842
NOTCLASS	0.0047	13.678	1.303	0.193
MTECH	0.1553	6.146	2.924	0.004
PRIORE	0.6308	-5.132	-3.127	0.002
R-SQUARE		0.123		
F-STAT		4.031		0.001
N		2560		

Source: Derived from data provided in Bowman-Mehay file.

Note: Sample based on officers who survived to 0-4 promotion board.

Table 7 shows the results of a maximum likelihood Logit model on a binary variable, TOPFIT12, for whether or not an officer ever received a RAP'd FITREP during grades 0-1 or 0-2. Again, the prior-enlisted officer is less likely to have ever received a RAP, and the effect is

highly significant. Women and minorities do not fare as well as whites and men. Married personnel and those with children do better than single and childless officers, but the results are not have statistically significant. Naval Academy and NROTC graduates do not compete as well as NESEP graduates, but not significantly so. Officers with technical degrees, both undergraduate and graduate, do significantly better than do those with a non-technical degree.

**Table 7. Logit Results On If An Officer Ever Received A RAP'd FITREP In Grades 0-1 Or 0-2 Of Staff Corps Officers (Dependent Variable = TOPFIT12)**

	PARAMETER	WALD	PR >
VARIABLE	ESTIMATE	CHI-SQUARE	CHI-SQUARE
INTERCPT	-0.2076	1.0431	0.3071
BLACK	-0.6237	7.5790	0.0059
OTHER	-0.6277	3.0307	0.0817
FEMALE	-0.2624	5.3683	0.0205
MARRIED	0.0704	0.3534	0.5522
CHILDREN	0.0122	0.0129	0.9097
USNA	-0.1504	0.4611	0.4971
NROTCS	-0.1546	0.8205	0.3650
NROTCC	-0.3510	1.4156	0.2341
OCS	0.0366	0.0519	0.8199
TECH	-0.3030	9.0818	0.0026
HI_SEL	0.0273	0.0385	0.8444
LOW_SEL	-0.0160	0.0185	0.8917
NOTCLASS	1.9910	7.9668	0.0048
MTECH	0.3304	7.0398	0.0080
PRIORE	-0.3682	14.2452	0.0002
-2 LOG L		60.3540	0.0001
CONCORDANT RATIO	60.60%		

Source: Derived from data provided in Bowman-Mehay file.

Note: (See Table 6).

**b. Performance As Lieutenant For Staff Corps Officers**

Table 8 shows the results of a simple regression on the variable PCTRAP3. PCTRAP3 is the number of FITREPs that are RAP'd, measured as a percentage of the valid FITREPs an officer has on file as a lieutenant. The information shows that a prior-enlisted lieutenant is over 8 percentage points less likely to receive a RAP'd FITREP. Potential explanations for this are discussed in the concluding section.

The Naval Academy, NROTC, and OCS graduate coefficients have turned positive for officers who are a lieutenant, but only the OCS coefficient is significant. Minorities and women are still less likely to receive a RAP, and the coefficients are significant at least at the 0.05 level. Although attending a selective college was insignificant in the PCTRAP12 and TOPFIT12 model, it is positive and significant at the 0.10 level in the PCTRAP3 model. Attending a bottom-rated college has a negative effect, but it is significant only at the 0.11 level.

**Table 8. Regression Results On Percentage Of RAP FITREPs  
In Grade 0-3 Of Staff Corps Officers  
(Dependent Variable = PCTRAP3)**

VARIABLE	MEAN	COEFFICIENT	T-STAT	PROB>[T]
INTERCEP	1.0	70.2523	25.387	0.0001
BLACK	0.0473	-6.9217	-2.537	0.0112
OTHER	0.0178	-8.4026	-1.908	0.0565
FEMALE	0.3106	-3.6287	-2.373	0.0177
MARRIED	0.6363	1.6077	0.998	0.3183
CHILDREN	0.4814	-0.2209	-0.150	0.8811
USNA	0.1131	2.0980	0.690	0.4903
NROTCS	0.1646	2.1198	0.918	0.3587
NROTCC	0.0333	6.5585	1.723	0.0850
OCS	0.5798	7.0517	3.234	0.0012
TECH	0.4756	-6.9889	-5.180	0.0001
HI_SEL	0.2270	3.2726	1.727	0.0842
LOW_SEL	0.1696	-2.5480	-1.612	0.1071
NOTCLASS	0.0047	24.0387	2.802	0.0051
MTECH	0.1553	3.4076	1.986	0.0472
PRIORE	0.6301	-8.2861	-6.185	0.0001
R-SQUARE		0.0486		
F-STAT		8.7330		0.0001
N		2566		

Source: Derived from data provided in Bowman-Mehay file.

Note: (See Table 6).

Table 9 shows the results of a Logit regression on a binary variable, TOPFIT3, for whether or not an officer ever received a RAP'd FITREP during his or her six years or so as a lieutenant. The prior-enlisted officer is less likely to have a RAP'd FITREP during this period. Similar to the Logit models run for grades 0-1 and 0-2, the prior-enlisted coefficient is significant. Being married, holding a technical master's degree, graduating from a highly selective college, and being commissioned through

NROTC have positive effects on TOPFIT3, but none are statistically significant. Only the OCS coefficient is significant.

**Table 9. Logit Results On If An Officer Ever Received A RAP'd FITREP As A Lieutenant Of Staff Corps Officers (Dependent Variable = TOPFIT3)**

VARIABLE	PARAMETER ESTIMATE	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCPT	-0.8966	16.3559	0.0001
BLACK	-0.1876	0.6723	0.4122
OTHER	-0.1479	0.1756	0.6751
FEMALE	-0.1637	1.8194	0.1774
MARRIED	0.1530	1.4475	0.2289
CHILDREN	-0.1218	1.1143	0.2911
USNA	0.2298	0.9455	0.3309
NROTCs	-0.1371	0.5015	0.4788
NROTCC	0.1431	0.2126	0.6447
OCS	0.3078	2.9568	0.0855
TECH	-0.1367	1.6247	0.2024
HI_SEL	0.1440	0.9305	0.3347
LOW_SEL	-0.1992	2.2922	0.1300
NOTCLASS	1.4303	5.4783	0.0193
MTECH	0.1357	1.0068	0.3157
PRIORE	-0.4113	15.4881	0.0001
-2 LOG L		55.1840	0.0001
CONCORDANT RATIO	57.70%		

Source: Derived from data provided in Bowman-Mehay file.

Note: (See Table 6).

**c. Promotion To Lieutenant Commander For The Staff Officers**

Tables 10 and 11 present the promotion to lieutenant commander model for those officers who continued in service through the ten years or so to the promotion board. Table 10 includes all of the promotions from fiscal



1985 to 1995 in the sample. Table 11 presents results for fiscal years in the pre-drawdown era, which includes 1985 to 1990 only. In Table 10, the prior-enlisted officer variable is negative and significant at the 5-percent level. However, when the sample is restricted to the pre-drawdown period, when personnel flows were in steady state, the effect of prior service is statistically insignificant. This suggests that policy changes during the drawdown may have negatively affected the promotability of prior-enlisted officers.

Among minorities, blacks are less likely to promote in both periods. The coefficient of black is significant for both estimates. The "other" category is negative but not significant for both samples. Women have a higher probability of promotion in both the pre-drawdown and full samples.

As for education, having a technical master's degree helps significantly for promotion. Also, coming from a highly-selective college becomes more important during the drawdown years. All of the commissioning source variables are insignificant for both samples.

Table 10. Promotion To Lieutenant Commander In The Staff Corps, For Officers Who Survived To The Selection Board (Sample Includes All Fiscal Years)  
(Dependent Variable = PROMOTE)

VARIABLE	PARAMETER ESTIMATE	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCPT	1.3681	43.7324	0.0001
BLACK	-0.4663	11.4680	0.0007
OTHER	-0.0629	0.0944	0.7586
FEMALE	0.2990	11.9829	0.0005
MARRIED	0.2376	6.9157	0.0085
CHILDREN	-0.1379	2.8644	0.0906
NROTCS	0.0149	0.0174	0.8950
NROTCC	-0.1542	0.5660	0.4518
OCS	0.0696	0.4537	0.5006
TECH	-0.0962	1.6760	0.1955
HI_SEL	0.3785	15.6409	0.0001
LOW_SEL	-0.0597	0.5002	0.4794
NOTCLASS	0.7483	1.7765	0.1826
MTECH	0.7841	54.9254	0.0001
PRIORE	-0.1810	4.8534	0.0276
FY86	-0.3937	4.1181	0.0424
FY87	-0.4125	5.4859	0.0192
FY88	-0.7098	14.2810	0.0002
FY89	-0.7294	15.3975	0.0001
FY90	-0.6619	12.3435	0.0004
FY91	-0.6621	12.6257	0.0004
FY92	-0.9464	18.9868	0.0001
FY93	-0.7114	13.9825	0.0002
FY94	-0.7324	14.4587	0.0001
FY95	-0.6438	11.8391	0.0006
-2 LOG L		156.9690	0.0001
CONCORDANT RATIO	60.30%		

Source: Derived from data provided in Bowman-Mehay file.

**Table 11. Promotion To Lieutenant Commander In The Staff Corps, For Officers Who Survived To The Selection Board (Sample Includes Pre-Drawdown Fiscal Years) (Dependent Variable = PROMOTE)**

VARIABLE	PARAMETER ESTIMATE	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCPT	1.5307	33.0819	0.0001
BLACK	-0.4935	6.4716	0.0110
OTHER	-0.1788	0.2583	0.6113
FEMALE	0.3174	6.8394	0.0089
MARRIED	0.2207	3.0887	0.0788
CHILDREN	-0.1714	2.1763	0.1402
USNA	-0.0421	0.0271	0.8692
NROTCS	-0.0953	0.2778	0.5982
NROTCC	-0.3468	1.4155	0.2341
OCS	-0.0976	0.3272	0.5673
TECH	-0.1785	2.9212	0.0874
HI_SEL	0.3391	4.7320	0.0296
LOW_SEL	-0.0995	0.7089	0.3998
NOTCLASS	1.5781	2.1807	0.1398
MTECH	0.8168	27.8439	0.0001
PRIORE	-0.1309	1.1811	0.2771
FY86	-0.3998	4.2048	0.0403
FY87	-0.4127	5.4249	0.0199
FY88	-0.7043	13.7889	0.0002
FY89	-0.7239	14.5661	0.0001
FY90	-0.6360	10.5770	0.0011
-2 LOG L		88.8360	0.0001
CONCORDANT RATIO	60.90%		

Source: Derived from data provided in Bowman-Mehay file.

#### **d. Marginal Probabilities**

Table 12 presents the marginal probabilities, computed from Table 11 (when personnel flows were in steady state), of promotion to lieutenant commander in the staff corps when each variable is changed from the base case. The base case is a white male officer, married with

children, from a school with a Barrons' selectivity rating of "medium", a restricted line officer with no graduate degree and an officer from a regular commissioning program. The prior-enlisted officer in the staff corps has a 1.4 percent smaller chance for promotion compared with the base case officer.

The probabilities of promotion are 6.7 percentage points less for blacks and 2.4 percentage points less for persons of "other" minority backgrounds. For the prior-enlisted minorities, however, blacks are only a half percentage point less than the base case and "other" minority is 6.9 percentage points above. Women have a significantly higher promotion probability than the base case, over 16 percentage points better; however, a female prior-enlisted officer is 1.7 percentage points above the base case.

Communities outside the restricted line are very hard hit for promotion opportunities. The hardest hit is the GURL. They are 33.9 percentage points less likely to be promoted to O-4. OTHSTFCP comes in second-worst, with 11.3 percentage points less of a chance for promotion and SUPLCORP is the least worst with only 6.7 percentage points less of a promotion probability.

Education makes a positive difference. Highly selective colleges have positive effects as well as graduate education, which add almost 10 percentage points to an officer's promotion probability.

**Table 12. The Marginal Probability Of Promotion To Lieutenant Commander In The Staff Corps, Given Survival To Promotion Board**

VARIABLE	PROMOTION PROBABILITY	MARGINAL PROBABILITY PERCENTAGE
BASE CASE	0.731	
BLACK	0.664	-6.7
OTHER	0.707	-2.4
FEMALE	0.894	16.3
SINGLE	0.702	-2.8
TECH	0.717	-1.3
HI_SEL	0.793	6.2
LOW_SEL	0.722	-0.9
NOTCLASS	0.812	8.1
SUPLCORP	0.664	-6.7
GURL	0.392	-33.9
OTHSTFCP	0.618	-11.3
GRADED1	0.825	9.5
MTECH	0.781	5.0
OTHER_E	0.800	6.9
BLACK_E	0.726	-0.5
FEMALE_E	0.748	1.7
PRIORE	0.716	-1.4

Source: Derived from data provided in Bowman-Mehay file.  
Calculated from the Logit model results in Table 11.

## **B. PROMOTION TO LIEUTENANT COMMANDER UNRESTRICTED LINE**

Unrestricted line officers are commonly called "warriors." It is logical, then, to think that there would be a smaller number of women in these categories since women have been barred until just recently from serving in combat-related positions. For all the statistics presented in the following section, please refer to Table 3.

### **1. Descriptive Statistics For URL**

#### **a. Prior Vs Non-Prior-Enlisted Officers**

It should be noted that over 28 percent of the line officers have prior-enlisted experience.

#### **b. Gender**

The gender makeup of line officers is in stark contrast to that of the staff corps, with women accounting for only 1.5 percent of officers in the line ranks. At the same time, prior-enlisted female officers account for 0.4 percent of all line officers. This means that prior-enlisted women comprise almost one-third of the total female population in the line community.

#### **c. Race**

In the unrestricted line, Table 3 shows that the Navy is well behind its "12-12-5" policy goals, with only

3.2 percent black and 2.3 percent Hispanic and "other" minorities (combined). For the prior-enlisted officers, 0.9 percent are black and 0.5 percent make up the rest of the minorities. Note that between 20 to 30 percent of the minority officers come from the enlisted force in one form or another.

#### **d. Total Service**

The total service time for the average prior-enlisted officer who continued to the 0-4 promotion board in the unrestricted line is 12.2 years, with a standard deviation of 3.6 years. The mean service time for an officer with no prior service is 10.3 years, with a standard deviation of 1.1 years.

Table 13 shows the number of years in prior-enlisted service for line officers in the database. Officers with zero years have no prior-enlisted service. As seen here, 12.8 percent of the prior-enlisted officers are commissioned after ten-years of enlisted service. Under normal conditions, this would put them at twenty years of total service time when they are looked at for grade 0-4, because promotion to 0-4 occurs around the tenth year of commissioned service.

**Table 13. Breakdown Of Prior-Enlisted Time Served For Line Officers**

<b>PRIOR ENLISTED YEARS OF SERVICE</b>	<b>FREQUENCY</b>	<b>PERCENT OF SAMPLE</b>
0	18,363	74.4
2	7	0.0
3	202	0.8
4	848	3.4
5	440	1.8
6	674	2.7
7	630	2.6
8	241	1.0
9	121	0.5
10	3,146	12.8

**Source:** Derived from data provided in Bowman-Mehay file.

**Note:** Percentages based on total number of officers at 0-3 promotion board.

**e. Warfare Community**

For the unrestricted line communities, the SWO community comprises the highest proportion 13 percent, followed by Pilot with 12 percent, and NFO and SUB with 9.1 and 6.1 percent, respectively. If the aviation communities (pilot and NFO) are combined, then "aviation" makes up 21.1 percent of the line officers.

**f. Year Groups**

Table 14 shows the number of officers screened at each promotion board for fiscal 1985 through 1995. This equates to officer year groups 1976 through 1986. The frequencies represent the number of officers being reviewed by each promotion board, which includes the number promoted



plus the number who failed to be selected for lieutenant commander. There appears to be significant variation in the number and percentages for promotions from year to year, which is accounted for in the models using dummy variables for the promotion board years. Fiscal 1992 promotion board data were mis-coded into both Fiscal 1991 and Fiscal 1993 promotion boards. The effect is not significant to this study.

**Table 14. How Many Screened At Each 0-4 Promotion Board For Line Officers**

<b>FISCAL YEAR</b>	<b>FREQUENCY</b>	<b>PERCENT OF SAMPLE</b>
<b>1985</b>	259	2.5
<b>1986</b>	1,096	10.8
<b>1987</b>	1,080	10.6
<b>1988</b>	846	8.3
<b>1989</b>	1,264	12.4
<b>1990</b>	1,028	10.1
<b>1991</b>	1,148	11.3
<b>1992</b>	0	0.0
<b>1993</b>	926	9.1
<b>1994</b>	957	9.4
<b>1995</b>	1,553	15.3

**Source:** Derived from data provided in Bowman-Mehay file.

## **2. Model Results**

### **a. Performance As Ensign And Lieutenant Junior Grade For URL**

Table 15 shows the results of a simple OLS regression on the variable PCTRAP12. PCTRAP12 is the percentage of FITREPs that are RAP'd out of all valid

FITREPs an officer has on file in grades 0-1 and 0-2. The information shows that a prior-enlisted officer receives about 4 percent fewer RAPs. The effect is highly statistically significant. Some possible reasons for this are presented in the concluding section.

Prior-enlisted officers are not the only ones who are falling short on RAP reports. Minorities, Naval Academy graduates and NROTC graduates also have lower percentages. Among the groups with higher RAP percentages are married personnel, officers who graduated from highly selective colleges, and officers who have a master's degree in a technical field. Women also have a positive percentage, but it is not statistically significant.

Table 16 shows the results of a maximum likelihood Logit model on a binary variable, TOPFIT12, for whether or not an officer has ever received a RAP'd FITREP during grades 0-1 or 0-2. The prior-enlisted officer is less likely to have ever received a RAP, and this is statistically significant. Blacks are less likely to receive a RAP but this effect is not significant. At the same time, officers in the "other" minority category are less likely to receive a RAP, which is significant, and women are more likely to receive a RAP, which is

significant at the 0.10 level. Being married and having children have a positive effect, but are not statistically significant. Possessing a master's degree in a technical field has an increased effect on RAPs received, and the effect is significant.

**Table 15. Regression Results On Percentage Of RAP FITREPs In Grades 0-1 And 0-2 As A Line Officer**  
(Dependent Variable = PCTRAP12)

VARIABLES	MEAN	COEFFICIENT	T-STAT	PROB>[T]
INTERCEP	1.0	31.922	9.972	0.0001
BLACK	0.033	-5.401	-1.773	0.0763
OTHER	0.016	-13.112	-3.086	0.0020
FEMALE	0.016	5.896	1.361	0.1736
MARRIED	0.783	2.059	1.360	0.1739
CHILDREN	0.544	1.226	0.981	0.3267
USNA	0.319	-12.748	-3.937	0.0001
NROTCS	0.237	-9.800	-3.653	0.0003
NROTCC	0.031	-6.906	-1.733	0.0832
OCS	0.359	-2.796	-1.065	0.2869
TECH	0.608	-1.500	-1.262	0.2071
HI_SEL	0.434	5.074	2.755	0.0059
LOW_SEL	0.107	-2.171	-1.188	0.2349
NOTCLASS	0.004	-3.271	-0.373	0.7090
MTECH	0.099	13.237	7.258	0.0001
PRIORE	0.426	-3.763	-2.809	0.0050
R-SQUARE		0.021		
F-STAT		7.621		0.0001
N		5248		

Source: Derived from data provided in Bowman-Mehay file.

Note: Sample based on officers who survive to 0-4 promotion board.

**Table 16. Logit Results For If A Line Officer Ever Received A RAP'd FITREP In Grades 0-1 Or 0-2 (Dependent Variable = TOPFIT12)**

	PARAMETER	WALD	PR >
VARIABLE	ESTIMATE	CHI-SQUARE	CHI-SQUARE
INTERCPT	-0.2025	1.4145	0.2343
BLACK	-0.1701	1.0154	0.3136
OTHER	-0.9208	10.6572	0.0011
FEMALE	0.4264	3.5542	0.0594
MARRIED	0.0518	0.3925	0.5310
CHILDREN	0.0775	1.3125	0.2519
USNA	-0.8152	22.5312	0.0001
NROTCS	-0.5875	16.9833	0.0001
NROTCC	-0.5207	5.8715	0.0154
OCS	-0.2239	2.6243	0.1052
TECH	-0.1657	6.6671	0.0098
HI_SEL	0.3395	11.9715	0.0005
LOW_SEL	-0.0332	0.1135	0.7362
NOTCLASS	0.1263	0.0729	0.7872
MTECH	0.6994	53.7642	0.0001
PRIORE	-0.0990	1.8814	0.1702
-2 LOG L		121.4300	0.0001
CONCORDANT RATIO	57.20%		

Source: Derived from data provided in Bowman-Mehay file.

Note: (See Table 15).

#### **b. Performance As Lieutenant For URL**

Table 17 shows the results of a simple OLS regression on the variable PCTRAP3. PCTRAP3 is the percentage of FITREPs that are RAP'd out of the valid FITREPs an officer received as a lieutenant. The information shows that a prior-enlisted officer has over 8 percentage points fewer RAPs. The possible reasons for this are discussed in the concluding section.

Officers who were commissioned through the Naval Academy, NROTC, and OCS, and those who were technical undergraduates also have significantly fewer RAPs during their tours as lieutenants. Minorities are still less likely to receive a RAP. Women receive more RAPs, but the coefficient is not significant.

**Table 17. Regression Results On Percentage Of RAP FITREPs In Grade 0-3 Of The Line Communities**  
(Dependent Variable = PCTRAP3)

VARIABLES	MEAN	COEFFICIENT	T-STAT	PROB>[T]
INTERCEP	1.0	72.677	29.276	0.0001
BLACK	0.033	-5.617	-2.374	0.0177
OTHER	0.016	-6.857	-2.077	0.0378
FEMALE	0.016	2.861	0.850	0.3953
MARRIED	0.782	3.257	2.771	0.0056
CHILDREN	0.543	0.995	1.024	0.3057
USNA	0.319	-9.594	-3.820	0.0001
NROTCs	0.237	-6.741	-3.241	0.0012
NROTCc	0.031	-9.110	-2.944	0.0033
OCS	0.358	-4.619	-2.268	0.0233
TECH	0.608	-2.426	-2.629	0.0086
HI_SEL	0.434	5.186	3.629	0.0003
LOW_SEL	0.107	-1.738	-1.224	0.2209
NOTCLASS	0.004	-4.159	-0.611	0.5413
MTECH	0.098	2.791	1.970	0.0489
PRIORE	0.426	-8.548	-8.222	0.0001
R-SQUARE		0.029		
F-STAT		10.271		0.0001
N		5259		

Source: Derived from data provided in Bowman-Mehay file.

Note: (See Table 15).

Table 18 shows the results of a Logit model on a binary variable, TOPFIT3, for whether or not an officer has ever received a RAP'd FITREP during his or her time as a

lieutenant. The prior-enlisted officer is less likely to have a RAP'd FITREP. Similar to the Logit model for grades 0-1 and 0-2 the prior-enlisted variable is negative and significant. Being married, having children, being a woman, and possessing a technical master's degree results in a higher probability of receiving a rap as an 0-3, but the effects are not significant. The only positive coefficient that is significant is graduating from a highly-selective college.

**Table 18. Logit Results On If A Line Officer Ever Received A RAP'd FITREP As A Lieutenant  
(Dependent Variable = TOPFIT3)**

	PARAMETER	WALD	PR >
VARIABLE	ESTIMATE	CHI-SQUARE	CHI-SQUARE
INTERCPT	0.113	0.449	0.5029
BLACK	-0.296	3.171	0.0749
OTHER	-0.306	1.750	0.1859
FEMALE	0.138	0.367	0.5448
MARRIED	0.073	0.815	0.3666
CHILDREN	0.092	1.951	0.1625
USNA	-0.576	11.500	0.0007
NROTCS	-0.474	11.200	0.0008
NROTCC	-0.496	5.459	0.0195
OCS	-0.271	3.869	0.0492
TECH	-0.148	5.590	0.0181
HI_SEL	0.312	10.372	0.0013
LOW_SEL	-0.076	0.593	0.4413
NOTCLASS	-0.150	0.099	0.7525
MTECH	0.056	0.347	0.5561
PRIORE	-0.483	46.165	0.0001
-2 LOG L		100.063	0.0001
CONCORDANT RATIO	56.60%		

Source: Derived from data provided in Bowman-Mehay file.

Note: (See Table 15).

**c. Promotion To Lieutenant Commander For URL**

Tables 19 and 20 present the promotion to lieutenant commander, given that the officers continued in service to the promotion board. Table 19 includes the results for the full period, while Table 20 restricts the same to the pre-drawdown era. Again, as for the staff corps, Table 19 shows that the prior-enlisted officer variable is negative and significant at the 1 percent level. However, in Table 20, the prior-enlisted effect is not statistically significant. The drawdown appears to have affected prior-enlisted officers equally in both the staff and line communities.

Among racial and ethnic minorities, the promotion effects for blacks and "other" are negative and significant in both the pre-drawdown and full-advancement groupings. The effect for women is positive and significant for advancement in both the pre-drawdown and full-cycle groupings. As for education, having a technical master's degree helps significantly for promotion as well as does coming from a highly selective college.

**Table 19. Promotion To Lieutenant Commander For The Line Officer Who Survived To The Selection Board (Sample Includes All Fiscal Years) (Dependent Variable = PROMOTE)**

	PARAMETER	WALD	PR >
VARIABLE	ESTIMATE	CHI-SQUARE	CHI-SQUARE
INTERCPT	1.2432	47.2608	0.0001
BLACK	-0.5042	19.4665	0.0001
OTHER	-0.4058	7.4130	0.0065
FEMALE	1.2709	27.1855	0.0001
MARRIED	0.3876	38.7485	0.0001
CHILDREN	0.0821	2.3936	0.1218
NROTCS	-0.0757	1.1239	0.2891
NROTCC	-0.1583	1.4474	0.2290
OCS	0.0910	1.3964	0.2373
TECH	0.0291	0.3555	0.5510
HI_SEL	0.2626	14.6082	0.0001
LOW_SEL	-0.1205	2.8968	0.0888
NOTCLASS	-0.1626	0.2632	0.6079
MTECH	0.6404	70.7105	0.0001
PRIORE	-0.2389	13.1434	0.0003
FY86	-0.3538	4.5528	0.0329
FY87	-0.3335	4.0502	0.0442
FY88	-0.6065	12.8049	0.0003
FY89	-0.5408	10.3829	0.0013
FY90	-0.7148	17.0744	0.0001
FY91	-0.5580	10.5013	0.0012
FY92	0.3213	0.1754	0.6754
FY93	-0.5541	10.1952	0.0014
FY94	-0.9131	27.9194	0.0001
FY95	-0.9874	34.2053	0.0001
-2 LOG L		334.0550	0.0001
CONCORDANT RATIO	60.30%		

Source: Derived from data provided in Bowman-Mehay file.



**Table 20. Promotion To Lieutenant Commander For The Line Officer Who Survived To The Selection Board (Sample includes The Pre-Drawdown Fiscal Years)  
(Dependent Variable = PROMOTE)**

	PARAMETER	WALD	PR >
VARIABLE	ESTIMATE	CHI-SQUARE	CHI-SQUARE
INTERCPT	0.7444	9.3909	0.0022
BLACK	-0.5442	11.2584	0.0008
OTHER	-0.6640	8.2357	0.0041
FEMALE	1.4560	14.7927	0.0001
MARRIED	0.2789	10.4644	0.0012
CHILDREN	0.1602	4.5892	0.0322
USNA	0.5829	9.3011	0.0023
NROTCS	0.2798	3.5740	0.0587
NROTCC	0.3185	2.0479	0.1524
OCS	0.4511	9.8148	0.0017
TECH	0.0671	0.9089	0.3404
HI_SEL	0.2110	3.7806	0.0518
LOW_SEL	-0.1027	0.9905	0.3196
NOTCLASS	0.1824	0.1207	0.7283
MTECH	1.0372	50.2689	0.0001
PRIORE	-0.0567	0.3226	0.5700
FY86	-0.4050	5.1925	0.0227
FY87	-0.3778	4.5211	0.0335
FY88	-0.6212	11.6536	0.0006
FY89	-0.4789	6.9440	0.0084
FY90	-0.6742	12.6458	0.0004
-2 LOG L		192.6620	0.0001
CONCORDANT RATIO	61.20%		

Source: Derived from data provided in Bowman-Mehay file.

#### **d. Marginal Probabilities**

Table 21 computes the marginal probabilities for promotion to lieutenant commander in the unrestricted line community when each variable is changed from the base case. The calculations are based on Table 20 (when personnel flows were in steady state). The base case is a white male

officer, married with children, from a school with a selectivity rating by Barrons' of "medium," and a surface warfare officer (SWO) with no graduate degree and from a regular commissioning program. Table 21 shows that a prior-enlisted officer in the unrestricted line has a 1 percentage point lower probability of being promoted than the base case officer.

The probability for promotion among minorities is 7.7 percentage points less for blacks and 10 percentage points less for "others". For prior-enlisted minorities, however, blacks are 7.7 percentage points less likely to be promoted than the base case and "other" minorities are 5.9 percentage points more likely to be promoted. Women have a significantly higher promotion probability than the base case, over 22 percentage points better, and, a female prior-enlisted officer is 0.1 percentage point above the base case.

The OTHEURL has a 47.7 percent lower chance for promotion to O-4, and NFO has a 5 percent lower promotion probability compared to SWOs. Education makes a positive difference. Highly selective colleges have positive effects as well as graduate education, which adds almost 5 percent to an officer's promotion probability.

**Table 21. Marginal Probability Of Promotion To Lieutenant Commander As A Line Officer Given Survival To Promotion Board**

<b>VARIABLE</b>	<b>PROMOTION PROBABILITY</b>	<b>MARGINAL PROBABILITY PERCENT</b>
BASE	0.7241	
BLACK	0.6473	-7.7
OTHER	0.6241	-10.0
FEMALE	0.9444	22.0
SINGLE	0.6327	-9.1
NONTECH	0.7354	1.1
HI_SEL	0.7667	4.3
LOW_SEL	0.7034	-2.1
NOTCLASS	0.6872	-3.7
GURL	0.1435	-58.1
SUB	0.7743	5.0
PILOT	0.7239	0.0
NFO	0.6743	-5.0
OTHERURL	0.2475	-47.7
GRADED1	0.7721	4.8
MTECH	0.7846	6.1
OTHER_E	0.7835	5.9
BLACK_E	0.6471	-7.7
FEMALE_E	0.7254	0.1
PRIORE	0.7152	-0.9

Source: Derived from data provided in Bowman-Mehay file.  
Calculated from Logit model results in Table 20.

## **V. CONCLUSIONS AND RECOMMENDATIONS**

### **A. CONCLUSIONS**

#### **1. Prior Vs Non-Prior-Enlisted Officers**

Prior-enlistees make up a sizable portion of the officer corps of the Navy. Based on the Bowman-Mehay data file, prior-enlisted officers account for about 37 percent of the staff corps and about 28 percent of all line officers (refer to Table 3). Not much research has been conducted to track this phenomenon, and few researchers have even addressed it in studies of the Navy's officer corps.

#### **2. Gender**

There is a remarkable dichotomy in the gender composite of the staff and URL communities. Women account for almost 30 percent of the staff corps, yet they make up just 1.5 percent in the URL community (refer to Table 3). Now that more opportunities have been opened to women in the line community, it is expected that the proportion of females will increase over the next ten years. It will normally take about ten years for a newly-commissioned officer to be promoted to grade O-4.

### **3. Race**

The Navy has had a goal of "12-12-5" with respect to racial and ethnic compositions of its officer corps. This means that it seeks to have at least 12 percent black, 12 percent Hispanics, and 5 percent "Other" racial/ethnic minorities as a proportion of its commissioned officers. In all cases, the Navy is at best 5 percent black and lacking in the other categories as well (refer to Table 3). Between one-third and one-half of all minority officers come from the enlisted force. This is much lower than the 31 percent of "non-white" minorities in the enlisted force. (Kirby and Thie, 1996)

### **4. Total Service**

Total service is made up of prior-enlisted years of service and commissioned years of service. A majority of prior-enlisted officers have ten years prior-enlisted service (refer to Tables 4 and 13). This means that, on average, they are at their 20-year mark around the time of the promotion board for O-4. Armed with this knowledge, the promotion to lieutenant commander is not a "make-or-break" situation. The prior-enlisted officer can just retire with 20 years of total service if not picked up for promotion to O-4.

## **5. Performance As Ensign, Lieutenant Junior Grade, And Lieutenant**

Performance in the military is a measure of how well an individual does when compared with his or her peers. There are many ways to measure performance, some of which are more meaningful than others. This thesis looks at being Recommended for Accelerated Promotion (RAP) as a measure of performance. The RAP is only given, in theory, to the top 10 percent of a peer groups' officers. This does not mean that a particular finding, such as a prior-enlisted officer is 3 to 8 percent less likely to receive a RAP'd FITREP is a negative reflection on the entire group. It simply means that that group is outside the top 10 percent. One thing that does stand out is that prior-enlisted officers are less likely than officers without prior service to receive a RAP'd FITREP (refer to Tables 6-9 and 15-18).

## **6. Promote**

Promotion is a very simple one-shot deal, although the Bowman-Mehay files do not show above-zone promotions. But the percentage of above-zone promotions is small, about 1-3 percent. This study analyzes only officers promoted early and those promoted on time. The Logit model for the full period shows that prior-enlisted officers are less likely

to be promoted and that the results are significant (refer to Tables 10 and 19). However, when the promotion boards are limited to the pre-drawdown years, we find that the prior-enlisted variable for the staff corps loses its significance (refer to Table 11), which means that it cannot be ruled out that the effect is zero. The same is true for line officers, where the prior-enlisted variable again loses its significance (refer to Table 20). This suggests that the policy changes during the drawdown may have negatively affected the promotability of prior-enlisted officers. This may have occurred due to prior-enlisted officers being in years-of-service ranges that were targeted for separation incentives or programs, such as TERA (Temporary Early Retirement Act), SERB (Selected Early Retirement Boards), and VSI-SSB (separation bonuses).

## **7. Marginal Probabilities**

Marginal probabilities are found by taking a base case (in the study, the full sample was used) and changing only one aspect at a time, then looking at the results. This study found that being prior-enlisted has a negative 1.4 to negative 0.9 percentage point effect from the base case (refer to Tables 12 and 21). Caution should be exercised in that these percentages came from a variable that was not

significant in the first place. This means that we cannot rule out that the possibility that the effect is zero.

#### **8. Sources Of Promotion Rate Differential**

If there is a difference in promotion, how can it possibly be explained? One explanation is that total time in service is around 20 years at the 0-4 board and that most prior-enlisted officers are looking primarily at retirement and not advancement. Another reason is that the commands to which prior-enlisted officers are attached may be using service information for long-range personnel planning. That is the commanding officer (CO) may deliberately withhold a RAP'd ranking to a prior-enlisted officer thinking or knowing that the officer's plans do not include command of a unit (because the individual will not stay to grade 0-5 and beyond). The CO will instead give the ranking to an officer who is expected to stay in the Navy, in the hopes that it will help with his or her promotion at a later date.

This raises another question. If prior-enlisted officers are not getting RAP'd at the same rate as non-prior-enlisted officers how can we explain why they are promoted at about the same rate as non-prior-enlisted officers? The answer could be that the prior-enlisted



officers are given tougher jobs because of their prior experience levels. Promotion boards look at the positions held by junior officers, and the more difficult the position, the more it helps with promotion, which may offset the somewhat lower scores and ranking on fitness reports.

#### **B. RECOMMENDATIONS**

The findings of this study should be expanded. Future studies could focus on what jobs prior-enlisted officers held as junior officers and how fast they qualified in their watch-stations. In addition, their job, assignments, and experiences during their enlisted service could be tracked and analyzed for its effect on their performance as a commissioned officer. Surveys could also be given to prior-enlisted officers to find out their personal intentions regarding advancement and treatment by a command.

Navy policy may want to concentrate on providing more opportunities for advancement to commissioned status to enlisted personnel. A major benefit of such a policy would allow targeting and advancing minorities to bolster the officer ranks bringing it more in line with the enlisted ethnic makeup. This study shows that prior-enlisted

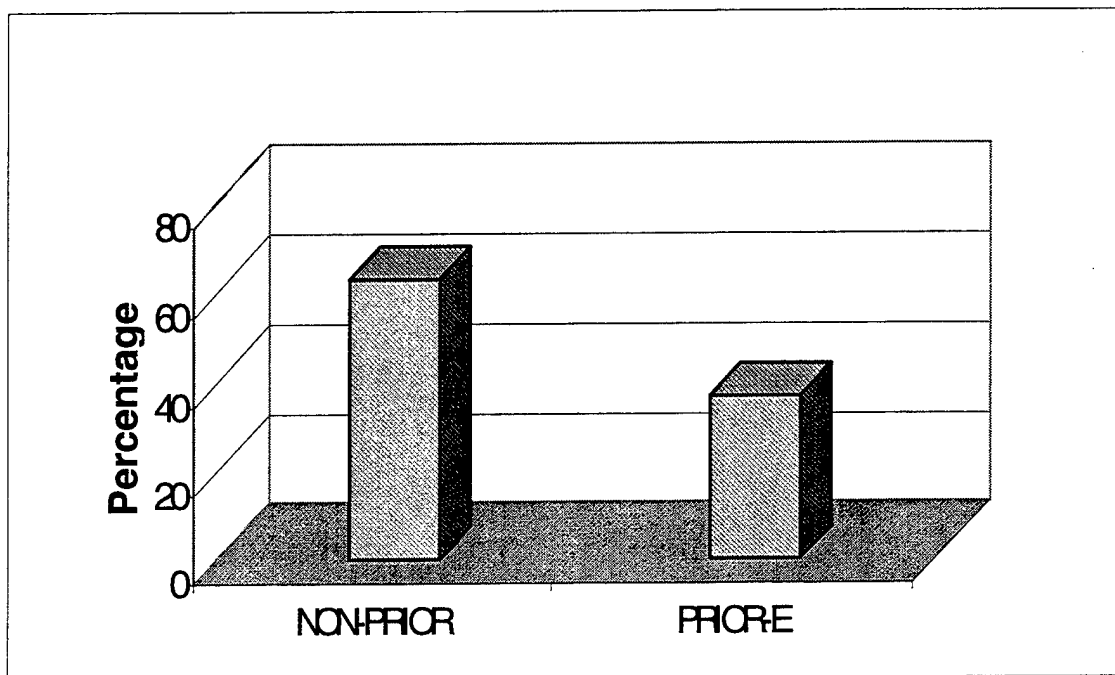
minority officers fare as well as or better than the base case officer. To achieve the Navy's goal of "12-12-5" promotion opportunities should be extended to minorities who have a "taste" for military life and will remain in service for at least 10 years as a commissioned officer. A stronger presence of minorities in the Navy's officer corps could help in recruiting efforts to attract even more minorities. As the saying goes, "You have to have more to get more."

An argument could be made against commissioning individuals who will serve in the Navy for only ten years and then retire. The rebuttal to this argument, however, is that ten years generally exceeds the average officer's Navy career. With 40 to 55 percent of the Navy officers leaving the service after their initial commitment (4 to 7 years, depending on community.) Minimum service requirement for SWOs is only four years, and up to seven years for pilots. Because prior-enlisted officers are more career-oriented and vested in the Navy, they will actually add continuity to their community.



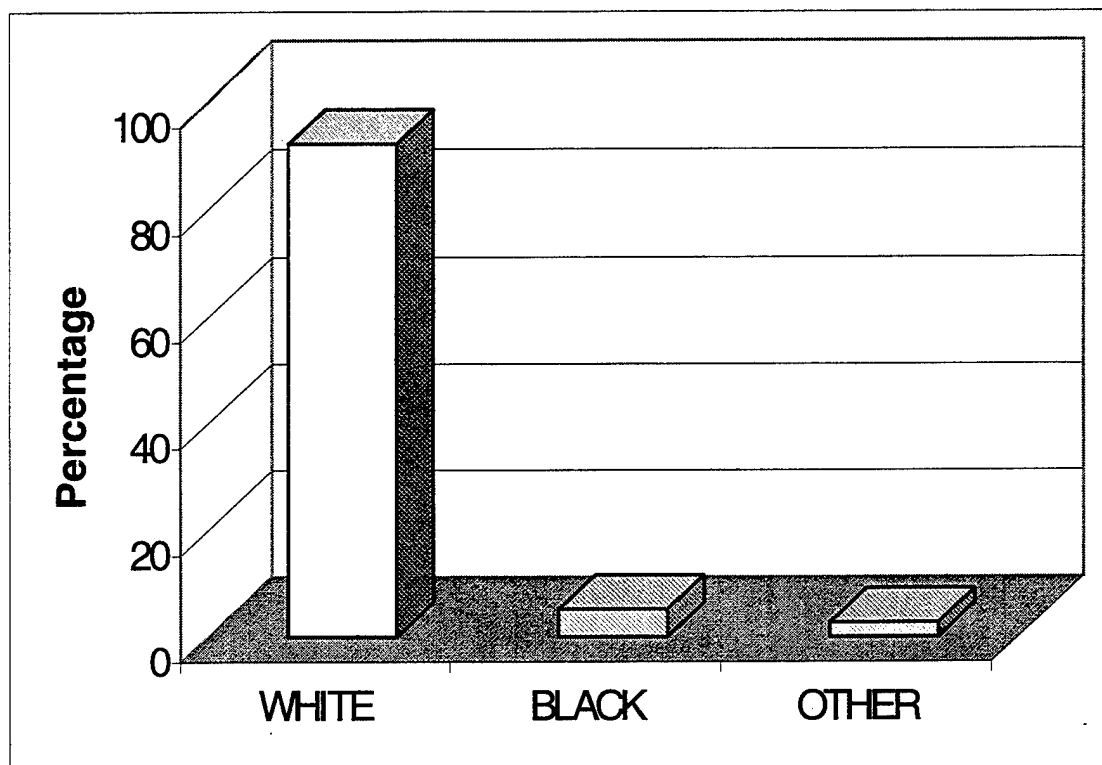
## **APPENDIX A: STATISTICS OF THE STAFF CORPS**

Figures 1 through 6 show graphically the simple statistics of the staff corps, Based on Table 3.



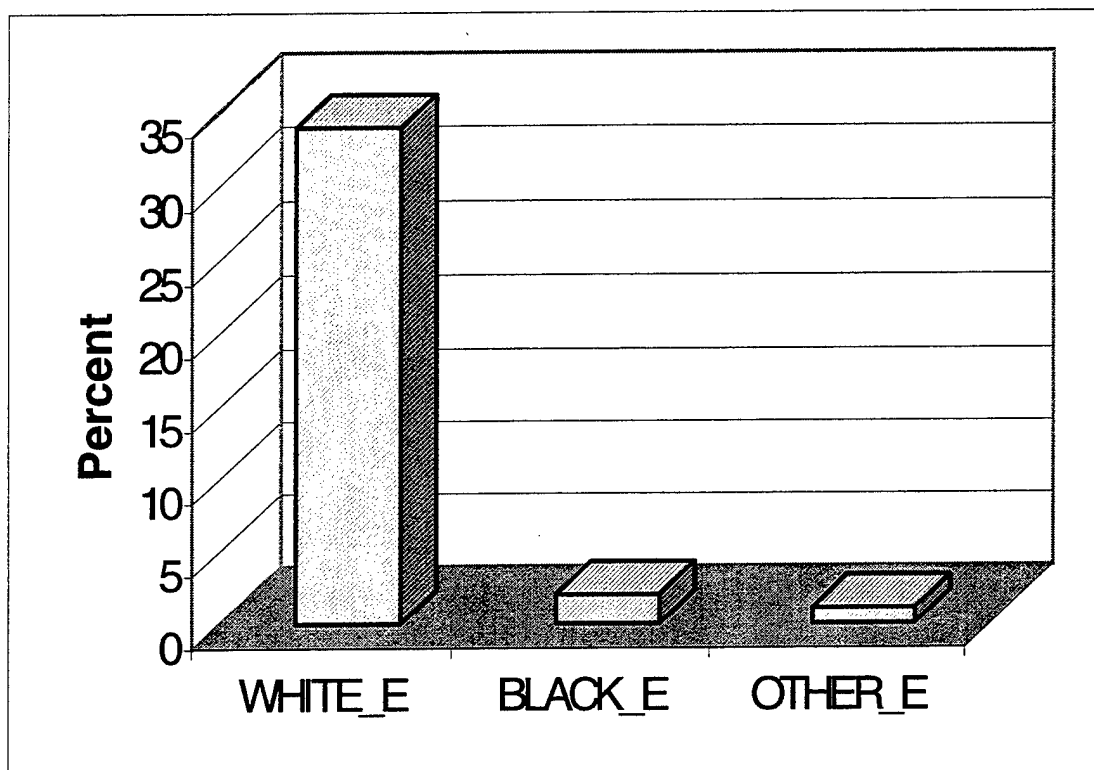
Source: Derived from data provided in Bowman-Mehay file

Figure 1. Percentage Of Staff Corps That Are Prior-Enlisted.



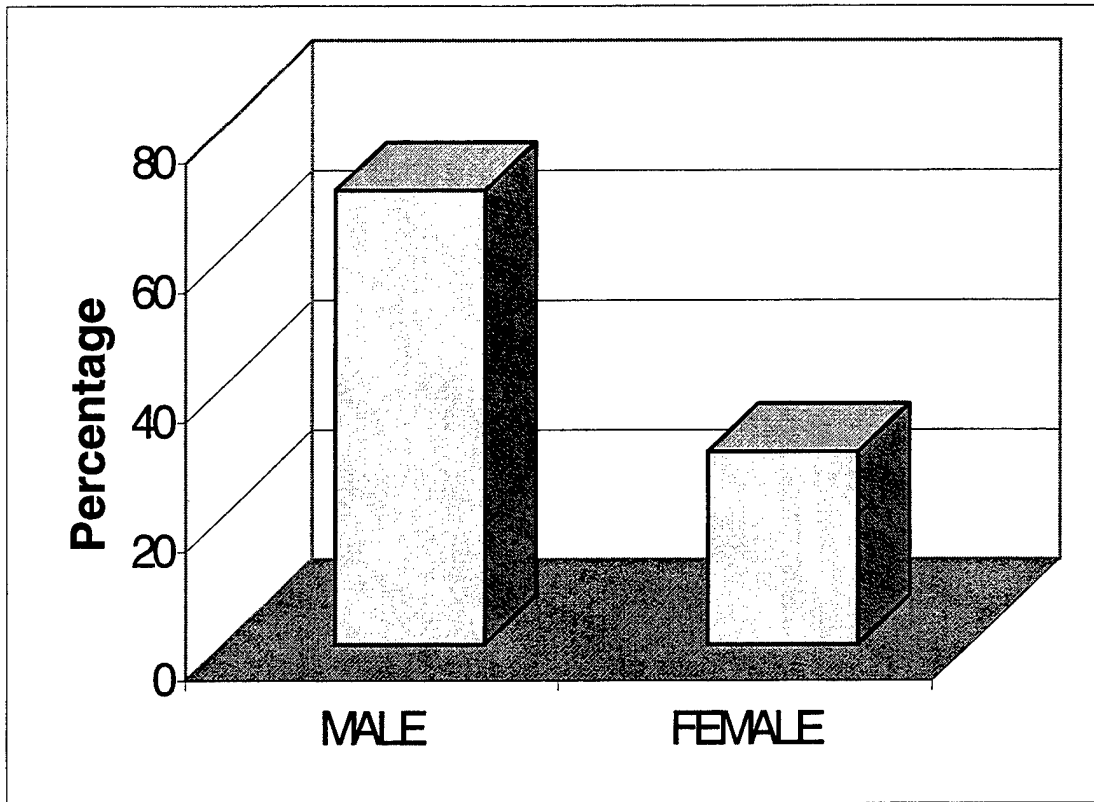
Source: Derived from data provided in Bowman-Mehay file

Figure 2. Percentage Of Staff Corps By Race



Source: Derived from data provided in Bowman-Mehay file

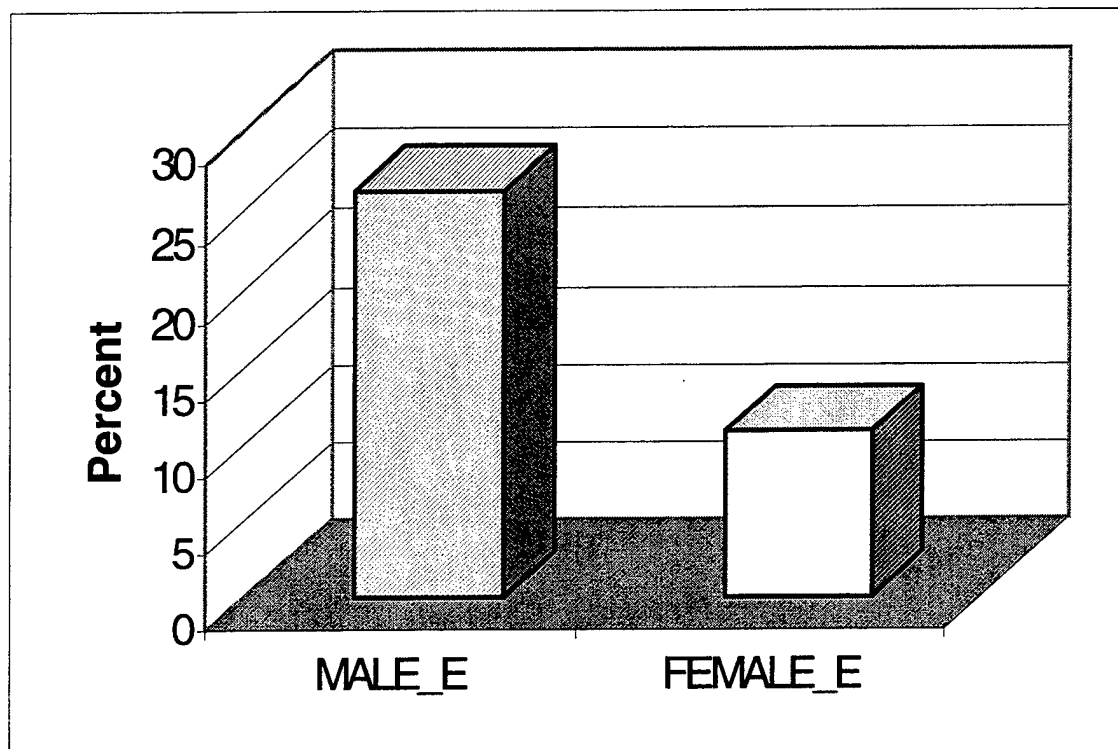
Figure 3. Percentage Of Prior-Enlisted Staff Corps By Race



Source: Derived from data provided in Bowman-Mehay file

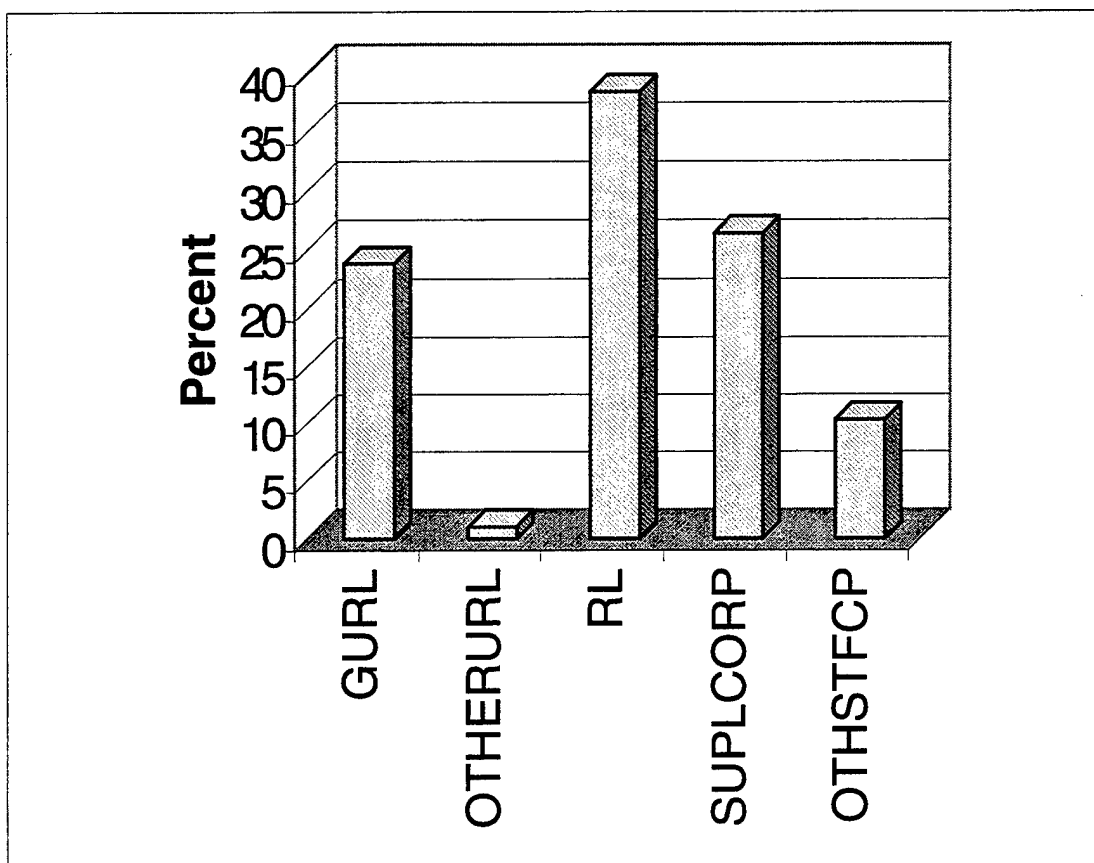
Figure 4. Percentage Of Staff Corps By Gender





Source: Derived from data provided in Bowman-Mehay file

Figure 5. Percentage Of Prior-Enlisted Staff Corps By Gender



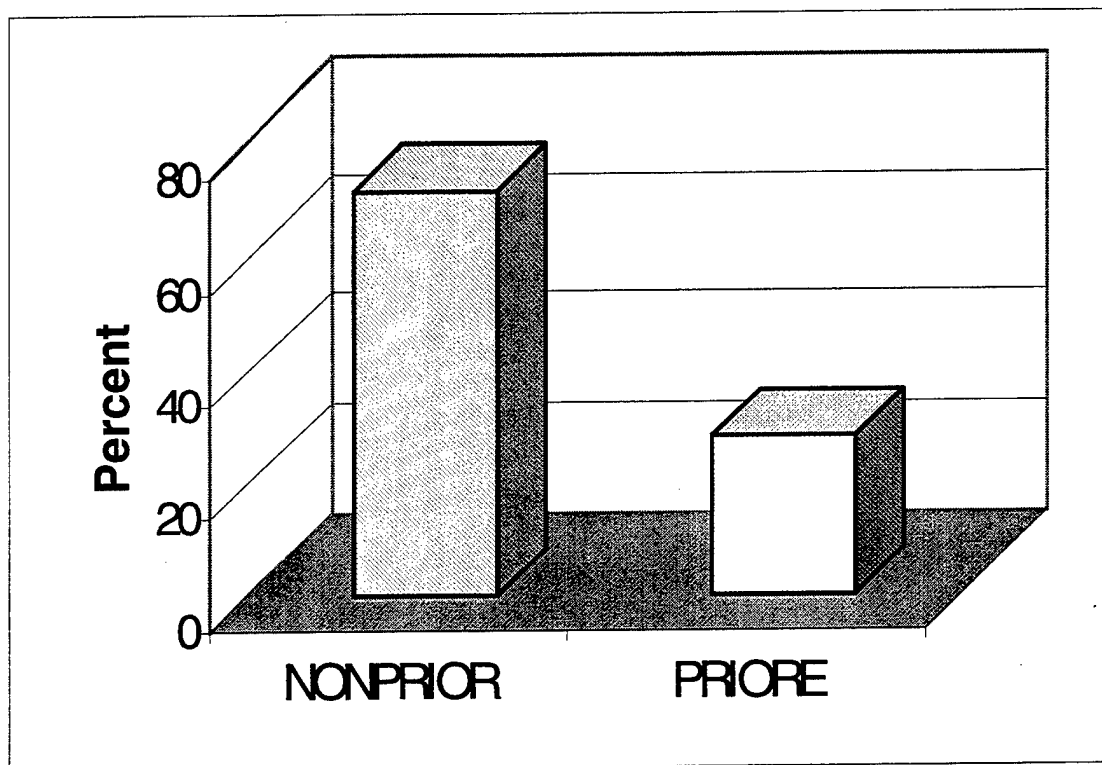
Source: Derived from data provided in Bowman-Mehay file

Figure 6. Percentage Of Staff Corps By Community As A Lieutenant



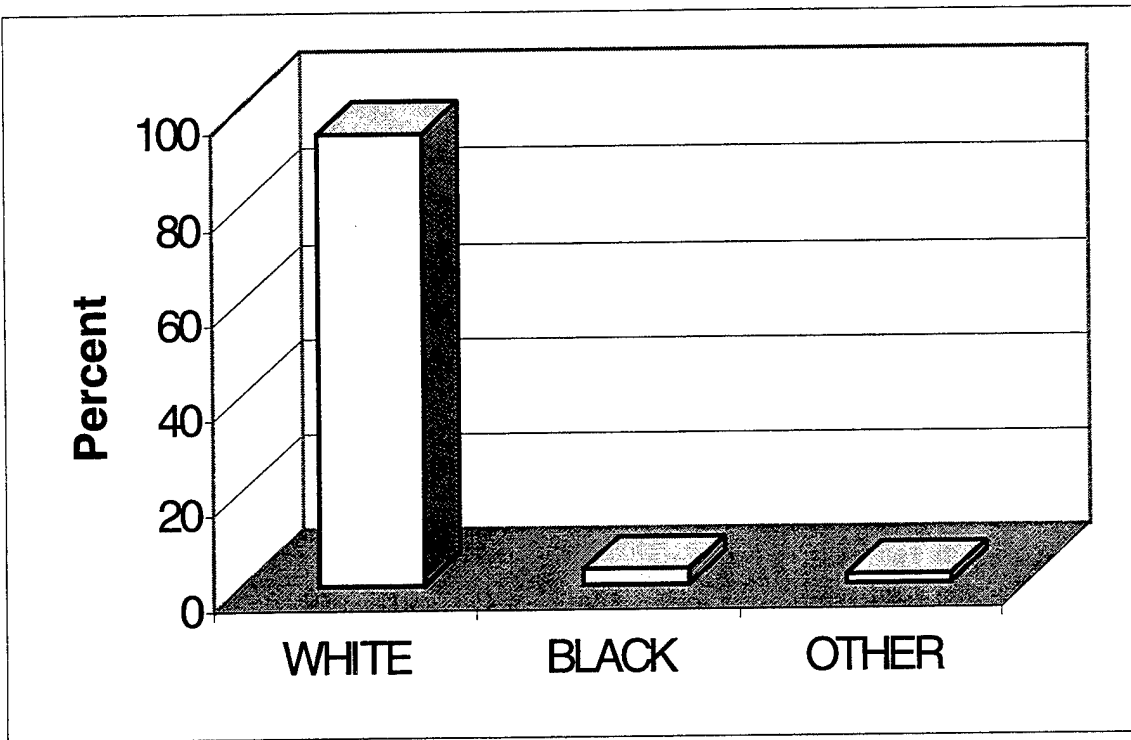
## **APPENDIX B: STATISTICS OF THE UNRESTRICTED LINE**

Figures 7 through 12 show graphically the simple statistics of the unrestricted line, Based on Table 3.



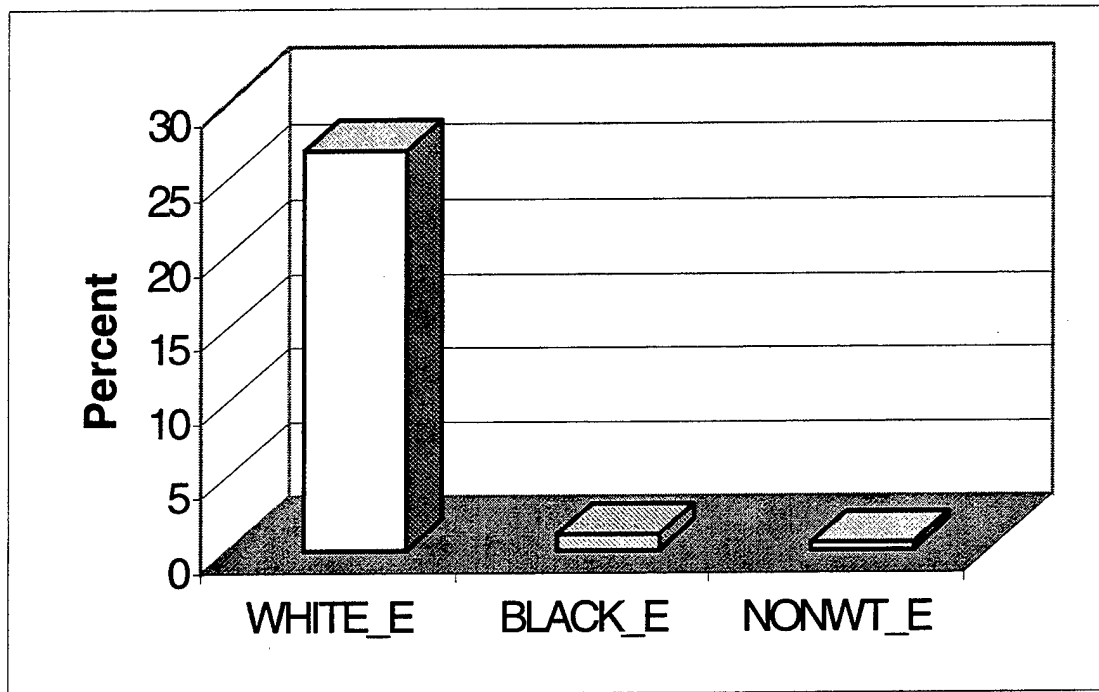
Source: Derived from data provided in Bowman-Mehay file

Figure 7. Percentage Of Line Officers That Are Prior-Enlisted



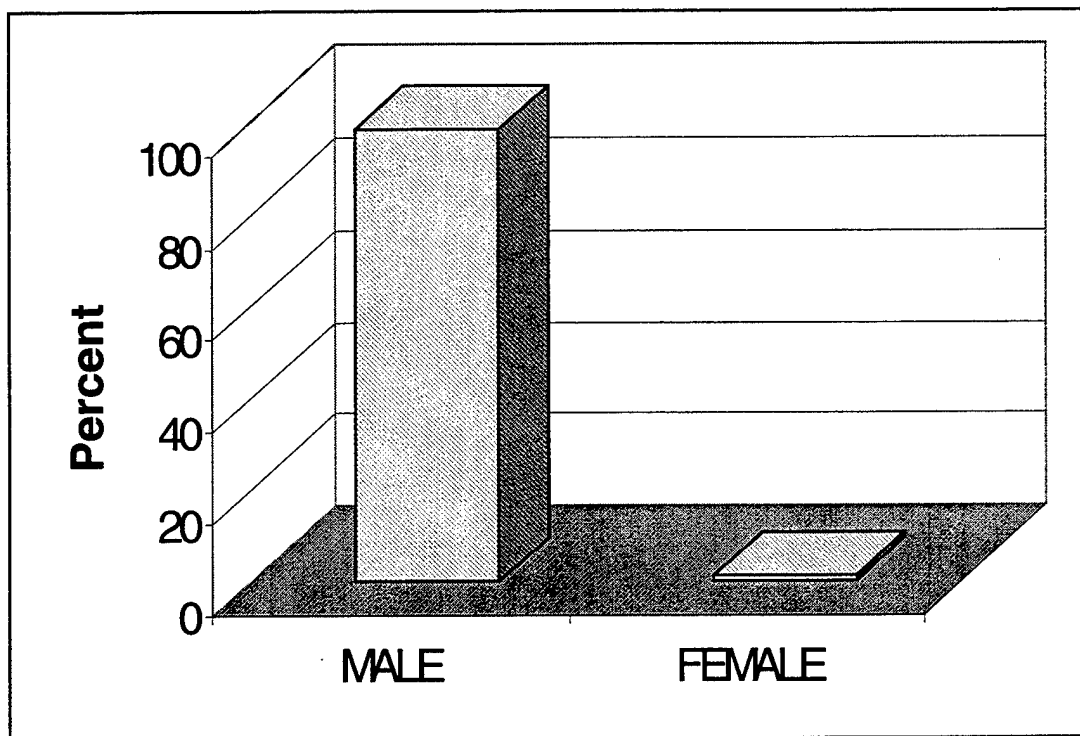
Source: Derived from data provided in Bowman-Mehay file

Figure 8. Percentage Of Line Officers By Race



Source: Derived from data provided in Bowman-Mehay file

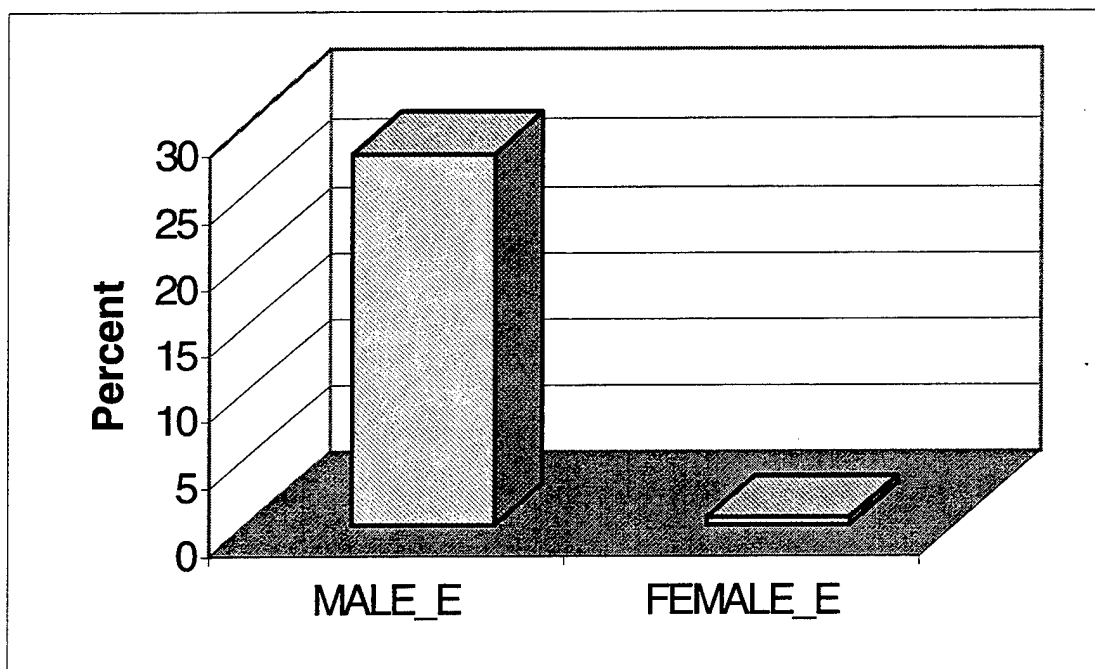
**Figure 9. Percentage Of Prior-Enlisted Line Officers By Race**



Source: Derived from data provided in Bowman-Mehay file

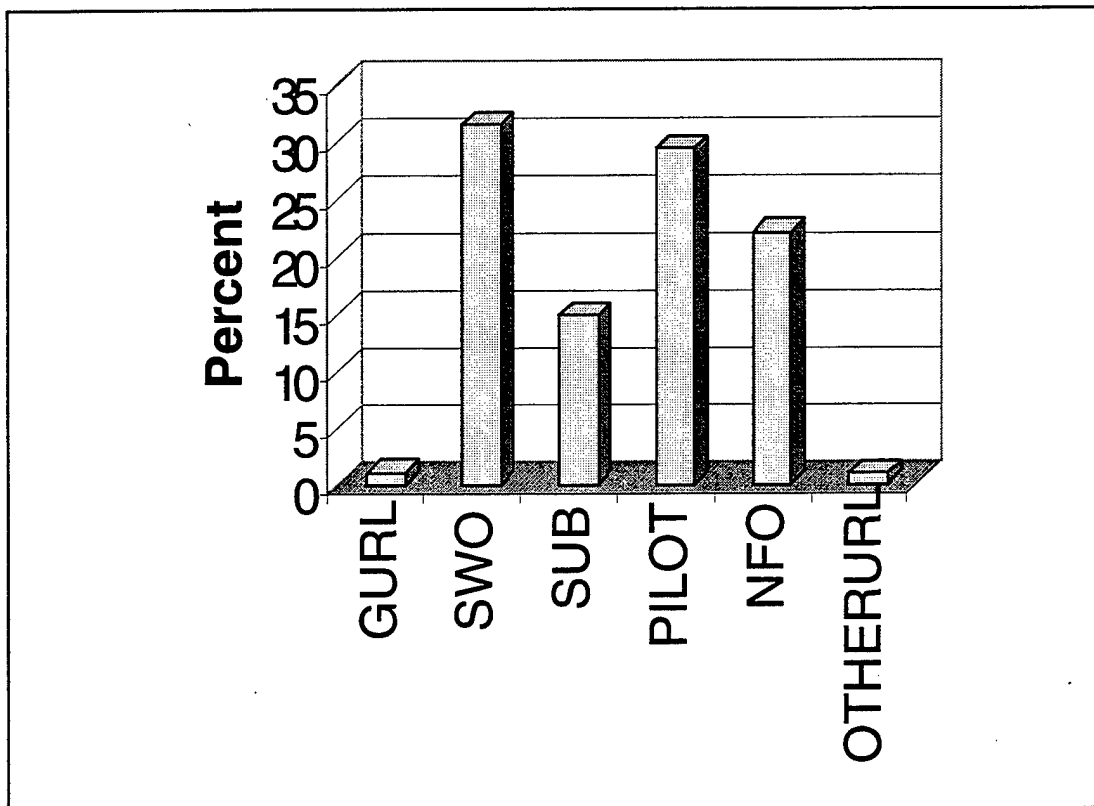
Figure 10. Percentage Of Line Officers By Gender





Source: Derived from data provided in Bowman-Mehay file

**Figure 11. Percentage Of Prior-Enlisted Line Officers By Gender**



Source: Derived from data provided in Bowman-Mehay file

Figure 12. Percentage Of Line Officers By Community As A Lieutenant



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